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ABSTRACT

In February 1990, the nation's governors adopted a set of goals designed to shape education reform efforts for the 1990s. The six goals address such pressing national education issues as early childhood education; school completion; student achievement and citizenship; math and science; literacy and lifelong learning; and safe, disciplined, and drug-free schools. They propose specific, obtainable objectives designed to enable schools to equip young people with skills needed to compete in the international marketplace. Featured are the observations and recommendations of the Mid-continent Regional Education Laboratory staff members, each of whom have a special interest and expertise in one of the six national goals. This document is divided into six sections, each of which is an article addressing one of the six national education goals. The articles discuss what actions need to be taken in order to achieve the various goals by the year 2000. Also included in this document is a summary of the objectives the Mid-continent Regional Education Laboratory staff members have for the goals they addressed. (KDP)

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ED 369 139

NOTEWORTHY

NATIONAL EDUCATION GOALS

CAN THEY LEAD SCHOOLS TO REAL REFORM?

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MID-CONTINENT REGIONAL EDUCATIONAL LABORATORY

NOTEWORTHY

NATIONAL EDUCATION GOALS

CAN THEY LEAD SCHOOLS TO REAL REFORM?

Fall 1990 • A publication of the Mid-continent Regional Educational Laboratory (McREL)

McREL Offers Observations on National Education Goals

In February, our nation's governors adopted a set of goals designed to shape education reform efforts for the 1990s. At the historic summit in Charlottesville, Va., where the goals were formed, President George Bush and the governors stated a specific intent: "The time has come...to establish clear, national performance goals, goals that will make us internationally competitive."

The six goals address such pressing national education issues as early childhood education; school completion; student achievement and citizenship; math and science; literacy and lifelong learning; safe, disciplined and drug-free schools. They propose specific, obtainable objectives designed to enable our schools to equip our young people with the skills needed to compete in the international marketplace.

The Mid-continent Regional Educational Laboratory has always been an advocate for school reform and redesign. We hold a strong belief that the key to successful school reform is the redesign of schooling into an approach more in touch with what we know about learning.

This issue of *Noteworthy* features the observations and recommendations of McREL staff members, each of whom have a special interest and expertise in one of the six national goals. We at McREL are proud of the high quality of our staff and are pleased to be able to share their views with you. We invite your response and reactions.

McREL congratulates our nation's governors on the development of this "road map" for school improvement and accepts the challenge of providing leadership for better schools in the Central Region.

C.L. Hutchins
Executive Director

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NOTEWORTHY

NATIONAL EDUCATION GOALS

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IMPLEMENTING THE GOVERNORS' GOALS: WHAT WILL IT TAKE?

"The task is nothing less than to reinvent the world."

Jonathan Schell
The Fate of the Earth

Dr. Shirley D. McCune is a senior director at the Mid-continent Regional Educational Laboratory and director of the McREL Center for Educational Equity. Dr. McCune's work includes assisting state-level decision makers with school improvement and equity issues.

Dr. McCune has worked as a classroom teacher, university faculty member, educational researcher, education association manager and federal executive. Her interests include community development, educational equity and the restructuring of education to meet the needs of our evolving information society.

The announcement of President Bush's Educational Summit and the work of the Governors' Association resulting in the identification of six national goals for public education sent rays of hope to the education community and the general public. Six primary goals — school readiness, school completion, student achievement and citizenship, mathematics and science, adult literacy and lifelong learning; and safe, disciplined and drug free schools—have been selected as the major reform targets to provide for the nation's educational well-being.

These goals provide a framework for school reform efforts, and they give us a sense of direction as to the outcomes which are to be achieved. They are laudable as a beginning point and as a point of departure. What may not be apparent, however, is that the ways we pursue these goals and the understandings we may have of the context for change will determine the degree of success we will have in meeting schools' educational change needs.

We can view these goals as fixing up the factory-like, industrial mentality which characterizes most of today's schools. America's basic educational design was developed more than 100 years ago when the needs of society were significantly different than the national and global environment we face today. Simply fixing up or tinkering at the edges may be described as an improvement approach which calls for doing better than we've done in the past.

Another way of approaching these goals is to use them to move us forward in developing an understanding of the future needs of our society and as stepping stones for the restructuring of education and the development of learning communities. The goals speak to common human needs. Attaining them will require new educational approaches, new organizations, new patterns of community cooperation, and new levels of commitment to learning and human resource development. If we are to select the second alternative, it is essential we gain a better understanding of societal changes, the current and future role of education, and the elements of educational change. Each of these will be discussed below.

Moving Through the "Waves" of Change

Perhaps one of the most difficult things for most of us to truly comprehend is that we have lived through a worldwide transformation of civilization. The majority of adults have grown up in the Industrial Age. Yet, we have seen and been part of the movement and continuing evolution into the Information Age.

This age, identified by Toffler as the Third Wave, can be seen in

several waves of economic growth and development. These include:

1st Wave:	Agriculture
2nd Wave:	Industrial
3rd Wave:	Services (financial, health, personal, etc.)
4th Wave:	Information (knowledge and high technology)
5th Wave:	Leisure and tourism
6th Wave:	Outer space

Most advanced countries of the Third World are moving toward Third Wave characteristics. Western nations have already moved beyond the Third Wave or the service era. Today, service jobs account for nearly 80 percent of North America's workforce (Feather, 1989). These waves are found simultaneously within countries and within states. The old waves do not disappear. Rather, the new waves extend and expand on the past. For example, we continue to make products in the United States, but the ways we make them change dramatically.

"Reinvention is not a process of instant change. Rather, it calls on us to reassess, rethink, and redesign our families, organizations and communities in ways which preserve the values and traditions that have meaning."

The 1990s will see the Fourth Wave information sector move more powerfully into place. This wave of computers, robotics, information, knowledge and media began to expand in the 1980s. In the 1990s, it will be the major job creator in the United States, Canada and Japan (Feather).

Development in many western states forecasts the emergence of the Fifth Wave of leisure and tourism. Western states' economic diversification efforts have focused, in large measure, on the expansion of tourism. Some states such as Hawaii are largely into the Fifth Wave.

Shifts as profound as those produced by economic restructuring inevitably require restructuring of all other segments of our society. We are aware that business, government, schools, social agencies, families and communities are caught in this transition of the worldwide economic base, and political and social relationships. In this sense, we must reinvent the world to meet a new set of requirements and conditions. Reinvention is not a process of instant change. Rather, it calls on us to recall, rethink and redesign our families, organizations and communities in ways which preserve the values and traditions that have meaning. We must move to change in ways that make our lives more productive and fulfilling.

Primary forces which are shaping schools and which must be considered in any educational reform effort include the following.

Economic Forces

As we rapidly move into a full Fourth Wave or information society, work is largely white-collar forms of assistance. While this service emphasis is likely to increase, work is also evolving to mind work. Some point to the fact that work is increasingly the process of learning to learn and creating new knowledge (Zubuoff, 1990).

Schools serve many functions. One of those functions is to prepare children and youth for their adult work roles. Many have suggested that the schools' strong emphasis on the teaching of facts must be extended to using facts to think and to process information. Being first in the world in science and mathematics as measured by factual recall is unlikely to have great meaning unless all students can understand and apply scientific concepts in their professional and personal lives.

Social and Demographic Forces

Schools must not only struggle with *what* to teach but also *who* they are to teach. Much of the social change we are experiencing revolves around the graying of the American population and the increasing racial and ethnic diversity of the population. The aging of Americans creates a problem of general support for schools.

Numerous surveys indicate that adult support of public schools begins to wane at about age 45. As children grow up, parents are sometimes less interested in schools and less willing to provide fiscal support. While this is not true for all adults, the pattern presents serious problems for schools. Some communities are acting to meet this challenge by providing adult services such as senior meals, job training, parenting programs, fitness programs and general adult education in the schools.

A second change has been the increase in cultural diversity in schools. Few schools have been able to meet the test of effective schools: schools where the academic achievement of poor, minority and immigrant children matches the average of middle class, Anglo students. American education is beginning to understand that equitable outcomes (comparable achievement) can only be met when students are provided instruction and support which meets individual and cultural needs.

Understanding that schools were designed for middle class, English-speaking, Anglo students and that many school characteristics —including forms of instruction—are culturally biased is a first step toward meeting the national goals.

The effort required for serving the needs of all groups of children is

likely to be the most significant task we can undertake for ensuring educational excellence. In a heterogeneous classroom, the actions required for achieving the learning of all groups of children are the same as those required for increasing the overall quality of learning.

Organizational Forces

A primary realization of changing economic activities is that the factory model and the bureaucratic model of organizing workers will no longer be successful. We have recognized the level of interconnectedness and a blurring of old categories calls for new ways of organizational structure and operation.

The distinctions between national and international, public and private, schooling and human resource development, and many other aspects of our lives are blurring. At the same time, this blurring of roles and responsibilities has created a fragmentation in all organizations, but especially in family and community. While we realize our interconnectedness and our common destiny, we struggle to find leadership, accountability and ways of working together.

Like all other organizations, schools are wrestling with these structural problems. Many have moved to site-based management or other decentralization strategies where school building staff are granted greater autonomy and responsibility. This action appears to be especially positive when the school provides outreach to parents and the neighborhood as well as works to meet the specific needs of students. This approach is successful when adequate leadership is available and when modifications are made in the organizational structures of reporting relationships, communication patterns, norms, decision making, accountability and rewards.

Educational Forces

Change in education has taken many forms. We see change in the goals of education, the scope of education, the organization of education and the technologies used for education.

Perhaps the most important shift in education goals is the movement from teaching facts to

teaching information processing. This includes moving from accreditation of students on the basis of seat time to more active measures of performance or outcomes. Most schools have already been moving away from schooling (dealing with the intellectual growth of children) to the realization of the necessity for an affective, physical, wholistic program of child development and human resource development.

"Understanding that schools were designed for middle class, English-speaking, Anglo students and that many school characteristics...are culturally biased is a first step toward meeting the national goals."

Education also continues to move into the community and provide more personalized forms of learning. In addition, information technologies such as computers, fiber optics and satellites open new possibilities for learning. Each of these changes suggest new roles for the teacher where less time is spent in direct instruction and more time in structuring and managing personal learning.

Individual Forces

Changes in the sectors of our society open new options and opportunities, but with this increased freedom comes the need for new levels of responsibility. Individuals must take greater responsibility for their physical, emotional and intellectual functioning. There must be a movement toward greater collaboration and caring as a result of increased aspirations for a quality of life for all groups. In a sense, fulfilling the potential of a Fourth Wave or Information Society calls on us to grow better people—people who can achieve and collaborate, people with a concern for themselves and for others. And, people with the ability to maintain stability and the courage to take risks.

Each of these forces continue to shape schools and society. Every aspect of educational restructuring must be considered within this larger context of change.

Re-inventing Education

The importance of education to the reinvention of the world and the restructuring of society cannot be overstated. Education enables people to do what they have never done before.

In a Fourth Wave or information society, the key resources of the society change. Three of the most critical resources of an information society are information capital (the ability to develop and apply information), human capital (the development of human capability at high levels) and organizational capital (the ability to create and maintain organizations which can bring people together to achieve established goals). Individuals, groups and nations able to develop high levels of information, human and organizational capital are those likely to provide best for the overall well-being of individuals and the society.

It is important to note how essential education and training functions are to the development of each of these forms of capital. The importance of education and training is extended in that they serve as the human infrastructure for every other sector of society.

As Feather states, "As we re-invent education, so will we re-invent our world. The most abundant and prolific natural resources—the unique human resource of brain and mind—remains essentially untapped" (p. 101).

Elements of Educational Change

The national education reform goals provide us with tangible areas for effort. Approaching change efforts in fragmented and unrelated ways will not achieve the nation's needs for a knowledgeable, literate and skilled population that can deal with the range of competencies and skills needed to function in the complexity of our evolving world.

Although specific goals give us a focus for our efforts, it is important to remember that the world changes through the interaction of four sets of factors. (Feather)

Social Motivation

As we satisfy one set of needs, we generate new ideas to sustain our progress. We then turn to technological innovations to achieve our ideas. As information spreads around the world, we see growing levels of agreement on disarmament, environmental protection and freedom.

Technological Innovation

Human frontiers are extended by our desire to extend the frontiers of scientific knowledge and increase economic and social benefits.

Economic Modernization

The effective management of technological resources to restructure and modernize the planet and its use of resources is essential. The goal must be to produce worldwide wealth on a sustainable basis.

Political Reformation

To ensure that people benefit from technology and economic reformation, the social development process must be elevated to a higher level of human aspiration. The worldwide movement to freedom and, in some cases, democracy, is testament to the reformation of political systems.

If these are the processes or the forces that are reinventing the world,

then what are the implications for a changed education?

Education must provide children, youth and adults with the knowledge and skills to understand and contribute to these processes. This would suggest that education reform should be embedded within a curriculum that includes the following: (Feather)

- Social skills, especially family studies, multicultural studies, communications/human relations, negotiating skills and a capacity for self-analysis and identity;
- Technology skills, especially the ability to understand the capability of modern technology, computer skills;
- Economic skills, especially information synthesis and management, economic management and the management of change; and
- Political skills, especially civic education about important social issues, goals and purposes, costs and benefits, and ethics of citizenship and political leadership.

National goals pursued within this larger context cannot help but increase our human and information capital.

Thus far, we have focused primarily on the "what" of change, but have not looked to the "how" issues of change. Sikes (1989) has delineated seven principles of change which are important to understanding individual and organizational change. These include the following:

- *You must understand something thoroughly before you try to change it.*
  Educational change requires knowledge of the community, the system, the history and the people involved. Attempting to bring about change without understanding and involving people is not likely to lead to success.
- *You cannot change just one element of a system.*
  Although specific reform goals can be achieved, it is essential that the people leading the change understand the elements of the entire school system and how they are likely to be impacted by the change.
- *People resist anything they think is punishment.*
  Much of the effort to bring about educational change has been done with an air of blame and negative judgements. Change efforts must be couched in the framework of a changed set of needs rather than focusing on the failures of the past. Helping people maintain their sense of self-worth is likely to facilitate change efforts.
- *People are reluctant to endure discomfort even for the sake of possible gains.*
  Overcoming resistance to change requires an environment that recognizes and rewards short-term gains, accepts mistakes, legitimatizes learning and offers strong social support.
- *Change always generates stress.*
  All change, pleasant or unpleasant causes stress. (Sikes) It is important to maintain a sense of control and deal with stress while we are trying to change.
- *Participation in setting goals and devising strategies reduces resistance to change.*
  People are likely to be committed to change in proportion to the degree they believe they participated in the decision to change. Education reform goals can outline where changes need to be made, but staff should develop how the goals are to be achieved.
- *Behavioral change comes in small steps.*
  Our behavior is complex, and it is usually difficult to make abrupt changes. Changes are likely to come about through a process of increased awareness, understanding, skills development, experimentation, support and reinforcement of progress.

Perhaps a last note should be highlighted. While change is inevitable, our understanding, growth and development are not. We can simply adjust to change without understanding its full meaning and the opportunities provided for us. Or, we can continually work to understand change and make it an integral part of our own growth and our increased ability to restructure schools.

There is no single way to implement the national goals or to restructure schools. As educators we have a unique opportunity to develop the education programs and systems that can meet the needs of children, community and society.

Our destiny is in our hands.

■ ■ ■

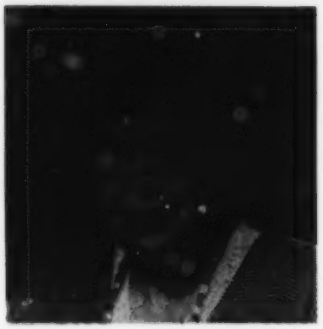
Feather, F. (1989). *G-forces: Reinventing the world.* Toronto: Summerhill Press.

Sikes, W. (1989). *Basic principles of change. The emerging practice of organizational development.* Alexandria, Va: NTL Institute for Applied Behavioral Sciences.

Zubuoff, S. (1990, April 6-8). NEA National Conference Series. Dallas, Texas.

GOAL 1: READINESS

By the year 2000, all children in America will start school ready to learn.



Dr. Shirley D. McCune is a senior director at the Mid-continent Regional Educational Laboratory and director of the McREL Center for Educational Equity. A brief description of Dr. McCune's work can be found on page 4.

The selection of the first goal as the issue of ensuring that all children are ready to learn when they enter school reflects a number of interrelated problems and developments. These include

- the fragmentation of the family and the critical needs for high quality, safe, dependable day care for young children created by the economic pressures for women to remain in the paid workforce;
- the growing body of research on the importance of the early childhood years as the foundation for academic and life achievement and development; and
- the lack of comprehensive, community child care systems which are focused on the needs of children.

Societal changes have created profound changes in the nature of the family, the community and the support systems that are available for serving the needs of young children. In most instances, these changes have not been well understood nor has adequate attention been given to ensuring that the needs of children are adequately met.

Ignoring the needs of young children is tantamount to ignoring the future of the nation. Studies suggest that from 40 to 50 percent of the child's ability to learn and develop fully is determined in the first five years of life (Carkhuff, 1986). Studies of school achievement support the importance of early development and the continuing impact of "home effects."

Despite our knowledge of the importance of early childhood, the health, economic and educational development of a significant portion of our young children is not being addressed. Nationally, 20 to 25 percent of young children live in poverty. A survey of superintendents in the Central Region suggests that the levels of poverty are higher, perhaps as much as 30 percent. Estimates of the incidence of child abuse of children in the McREL Region vary from 15 to 30 percent.

Increasing numbers of children are suffering from fetal alcohol syndrome, fetal alcohol effects, crack addiction effects, cocaine addiction effects and other forms of parent substance abuse. Nationally, about 20 percent of poor children are in Headstart programs, and about 25 percent of eligible children in the Central Region are in Headstart programs (Brezius & Foster, 1989).

The need for ensuring school readiness for all children cannot be met by a single approach. School readiness requires that systems of adequate nutrition and health care, family support, day care and early childhood education must be provided. These would require

- programs which provide adequate nutrition and health care for young children;
- programs which recognize the importance of the family and

support the family role as "first teachers" of children;
- programs which provide safe and developmentally sound day care for young children;
- early childhood programs for the 3- to 5-year-olds which provide high quality physical, social and language development activities.

Existing programs provide parts of these needs, but they are often fragmented, limited or not coordinated adequately to meet the basic needs of a majority of children.

Ensuring school readiness for all children requires efforts that coordinate the work of at least three major systems which contribute to the development of young children. These include family systems, health and social service systems, and early childhood educational systems. Each of these is discussed below.

Family Systems

The most important system for ensuring school readiness is the family. A goal of all state and community programs should be to support and extend the abilities of the family. An important challenge in reaching this goal is to recognize the impact of societal changes in fragmenting family systems and increasing the difficulty of child rearing.

Lisabeth Schorr (1988) identified some of the reasons for the fragmentation of family support for child development.

- More women, including more mothers of young children are working, the vast majority in response to economic pressures.
- More children are growing up in poverty and many more in concentrated poverty, subject to the strains that low incomes and depleted neighborhoods impose on family life.
- Greater population mobility not only means fewer relatives and friends nearby to lend an extra pair of hands, but also that parents and children move more frequently than did earlier generations, adding yet another element of strain.
- Child rearing has become more difficult. Gone are the clear shared values and precepts to be passed on to our children. From outside the family have come the lure of drugs and powerful pressures to define oneself by acquiring material goods. The pace of change is so rapid and values are so much in conflict that everyone has to make up instant new rules to live by — a task older societies never imposed.

Each of these societal changes has placed greater pressures on the family. The traditional roles of families to care for their children and to chart the course of their development remains, but it is equally clear that families need support systems.

"Ignoring the needs of young children is tantamount to ignoring the future of the nation."

Programs such as the Missouri and Kansas "Parents as First Teachers" are examples of ways support can be provided. Parenting skills programs which recognize the increased complexity of child rearing are needed. Quality child care programs for infants and toddlers (birth through 2 years old) are needed. Perhaps, however, the early focus should be given to early childhood programs for preschoolers (ages 3 to 4 or 3 to 5) if choices must be made. Later expansion could include programs for infants and toddlers.

Programs for infants, toddlers and preschoolers must be organized in ways which provide active involvement of parents and continuing sharing of information with them about the progress and problems of their children. Early childhood programs must support parents, not remove them from their roles and responsibilities.

Health and Social Service Systems

Strong nutritional, health and social service systems are essential to children's school readiness. Although children's nutritional and health care programs are available in some areas, they may not be accessible to rural, poor or abused children.

One of the valuable aspects of early childhood programs is that they provide a method of delivering nutritional, health and social services to children in need.

Such programs should have the capability to

- provide nutritional support to children through the provision of healthy snacks and lunches;
- identify health care providers who can provide health, dental and rehabilitation services;
- make arrangements for procuring such services;
- maintain health records on children;
- be able to identify health problems and provide adequate referrals;
- keep parents informed of health conditions;
- make parents aware of community services and resources and facilitate their use.

According to a study about the Head Start Program, "Head Start children are considerably more likely than non-Head Start children to receive mental and health examinations; speech, language and developmental assessments; nutritional evaluations; and biochemical, vision and hearing screenings."

The study also reported that Head Start children were healthier and had made gains in motor coordination and development (U.S. Department of Health and Human Services, 1985).

"The pace of change is so rapid and values are so much in conflict that everyone has to make up instant new rules to live by—a task older societies never imposed."

Social services provide additional support in the areas of income programs, child health, child protection, family and child services, court services and a variety of other community systems that may impact the family.

Early Childhood Education Systems

One of the difficult questions to be determined regarding early childhood programs for preschoolers is the approach and philosophy to be used. The most popular approach used by early childhood educators is a developmental approach influenced in large measure by the work of Piaget. The emphasis of this approach is not only to provide physical, social and language stimulation, but also to rely on the developmental progress of the child.

Other elementary educators tend to be more behavioral in their approaches in focusing on curriculum and instruction to stimulate child achievement. The differences in the approaches may be exaggerated for early childhood programs. Head Start programs sponsored by public schools do not differ in any significant way from programs in other settings other than the fact that teachers are paid at higher levels.

Many of the disagreements between early childhood educators and elementary educators are likely to reflect different age groups being served, different teacher-student ratios and different institutional settings.

A synthesis of research studies on early childhood programs identifies the program characteristics which make a difference (Cotton & Conklin, undated).

- *The importance of health and social services.* Several studies have found that health and social services for disadvantaged children and their families are an essential component of successful preschool programs.
- *Class size.* Most investigators agree that the student-teacher ratio should not go above 16:1, and many favor a 10:1 ratio for 4-year-olds.
- *Program continuity.* Efforts to increase program continuity and transition increase program effectiveness.
- *Inservice for teachers.* Staff development for teachers seems to pay off in terms of student achievement.
- *Half-day versus full-day kindergarten.* Most studies have found that disadvantaged children gain more short-term benefits from full-day kindergarten than half-day kindergarten. The long-term effects are less clear, but they appear to support the full-day kindergarten program.

The overall effects of early childhood programs are surprisingly positive. A research synthesis prepared by the Northwest Regional Educational Laboratory is summarized by the following statement:

"Well-designed educational programs for young, economically disadvantaged children can clearly affect their lives for the better, both during their school years and beyond (Cotton & Conklin, undated)."

The positive outcomes are both cognitive and social. The IQ and achievement scores of disadvantaged children increased over the short-run, but these gains seemed to disappear over time. Long-term benefits were found in the social areas. According to the research synthesis, students in early childhood education were

- more likely to remain in regular classes throughout their public school years;
- more likely to repeat grades;
- more likely to receive higher teacher ratings on measures of social and emotional maturity;
- more likely to complete high school;
- more likely to be rated higher on academic motivation, on-task behavior, capacity for independent work and time spent on homework;
- lower incidence of absenteeism and detentions;
- more likely to have higher scores of positive attitudes toward school and particular subject areas;
- more likely to have better self-esteem and greater belief in their ability to influence what happens to them;
- less likely to be involved in illegitimate pregnancy, drug abuse and delinquent acts;
- more likely to engage in school-sponsored sports;
- more likely to aspire to and enroll in post-secondary programs.

The well-known Perry Preschool High Scope Study documents positive long-term gains from early childhood programs and a claim of a 7:1 cost benefits ratio. Thus, for every dollar of program cost, a $7 cost benefit was obtained from such factors as reduced dropout, welfare and taxed earnings.

The point must be made, however, that the Perry Preschool

consistently exhibits the lowest adult-child ratios, the highest salaries and the highest costs. It is unlikely that programs with low spending, high teacher-student ratios, low salaries and inadequate teacher preparation are likely to achieve such results. Some of the poorly funded programs are likely to be little more than custodial and they may, in fact, be detrimental.

Policy Issues

While research supports the values of early childhood programs, a number of policy issues continue to be raised. These include program costs, program staff, program philosophy, public/private balance and coordination with other community services. Each of these is discussed below.

Program Costs

The costs of early childhood education programs vary considerably according to the components and organization of the program. One yard stick which can be used is the cost of Head Start. In 1988-89, it cost an average of $2,453 per child nationally. States within the Central Region varied considerably with averages from $2,263 per child to $2,561. If a statewide program were developed, some of these costs could be recovered from a variety of sources, including private sector funding, user fees (if provided for all children) and the government.

In any instance, money will be required, but it must be viewed in terms of an investment in human capital and a step toward reducing the costs of dropouts, crime, drugs, teenage pregnancy and other social problems. The data strongly suggest that the return on the investment is far beyond the original costs.

Program Staff

Two of the difficult issues which must be faced in the design of such programs are staff characteristics and configurations. The great majority of early childhood educators are females who receive low salaries. Many of the early childhood educators are paraprofessionals who have received nationally accredited training. While studies have been limited, there is nothing to suggest that all staff should be certificated teachers.

Many early childhood educators are of racial-ethnic minority backgrounds. They question the ability of public schools to provide quality programs which would utilize minority paraprofessional staff and be committed to working with parents. Given the past records of public schools in reaching out to poor and minority communities, this apprehensiveness is understandable.

There is no reason to assume that high quality early childhood programs cannot be provided by a combination of certificated supervisory personnel and the use of paraprofessional staff. This pattern of staffing would cost less, even though efforts must be made to raise paraprofessional salaries in many instances. A key to the success of this pattern of staffing is a strong program of continuing staff development and incentives for going on to complete formal teacher education programs. Not only would such a program benefit children, but it would also provide some movement to encourage the training of low income and minority persons in the teaching profession.

Program Philosophy

A consistent fear of many is that early childhood programs will become strong academic readiness programs which will attempt to introduce children to learning in highly structured ways before they are developmentally capable of such learning. While it is natural to understand that some would believe that the approaches used in upper elementary school would be introduced earlier, there is little to support this view. Studies of Head Start suggest that little to no program differences exist between programs

provided in public schools and programs provided in other settings (U.S. Department of Health and Human Services, 1985).

The strong emphasis of early childhood education programs on physical, social and language development provides a framework for developmental approaches. It should be noted, however, that developmental goals can be maintained while systematic instruction is provided. Research suggests that structured and teacher-directed programs resulted in greater short-term cognitive gain (Cotton & Conklin, undated).

Public/Private Balance

The existing network of private early childhood education programs have frequently opposed programs which would lead to greater public involvement in early childhood education. Given the difficulty of providing access for all students, it is wise to consider plans which would support high quality early childhood education in both public and private programs. In this event, arrangements should be made to ensure comparable services in the two areas.

Coordination with Community Services

A key feature of early childhood education programs has been their ability to provide comprehensive health, nutritional and social services for children. It is essential that these supplementary services be maintained in any education program expansion. Public and private services should be involved in providing the comprehensive level of service regardless of the sponsor of the early childhood education program. This effort is especially important as part of a larger community effort to better coordinate services to meet the needs of children and their families.

Potential Impact on Central Region

The seven states in the Central Region — Colorado, Kansas, Missouri, Nebraska, North Dakota, South Dakota and Wyoming — each provide a half- or full-day kindergarten program for 5-year-olds and have some federally and state supported Head Start programs. Missouri has pioneered with preschool programs and some 200 preschool programs are provided in public schools.

These programs are supported by Chapter I funds, local funds and parent fees. The parent program known as "Parents As First Teachers" adapted for use in Kansas has received national awards. Despite this effort, only a small percentage of eligible children are being provided the services needed in many of the Central Region states. There is a strong need for the expansion of programs for both disadvantaged and middle class children. Early childhood education is essential for disadvantaged children and valuable for middle class children.

States must take the leadership in dealing with the need for investing in the future of children. Here are some actions that should be taken at the national and state levels:

- Expand available funds for existing early childhood programs so larger numbers of eligible children may be served.
- Expand state and local support and incentives for providing early childhood programs in communities.
- Encourage quality staff development of early childhood personnel, and support paraprofessionals' efforts to become certificated teachers.
- Develop strong parent programs and encourage business, media and community group support of such programs.
- Encourage and provide support for collaborative work among public and private groups and agencies who serve the nutritional, health, social, education or other needs of children and their families.
- Build awareness among single and older populations of the needs of young children. They may not be confronted or familiar with the issues facing families with young children.

Early childhood education and ensuring all children are ready for school is not simply a priority for the education community. It must be everybody's priority because our children are our legacy for the future. We must take responsibility so future generations will be able to meet the challenges that they and our nation will face.

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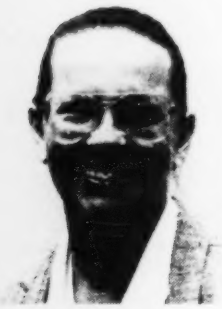
GOAL 2: SCHOOL COMPLETION

By the year 2000, the high school graduation rate will increase to at least 90 percent.



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A number of forces come together to make school completion an issue for governors across the nation:

- *National pride.* Many countries have higher rates of both school completion and adult literacy than the United States, and the United States ranks 14th among 16 industrialized nations in education spending per elementary and secondary students (Toch, 1990).
- *The belief that individuals who complete high school have a more promising economic future.* Earning power of high school dropouts, while always lower than that of peers who finished high school, has fallen dramatically in the past 15 years (Grant, 1988). In the next decade, those who fail to complete their schooling face even more limited futures because over half the new jobs created in the 1990s will require skills beyond the high school level (ASCT, 1989).
- *Strains on our economic competitiveness.* Business and industry spends more than $25 billion each year on remedial and literacy training for employees (Catterall, 1987).
- *Fears for our collective economic future.* It is estimated dropouts cost the country over $75 billion a year in lost tax revenues and increased welfare payments (Guthrie, et al., 1989).
- *Concerns for the very fabric of society.* Children are the fastest growing sector in poverty, and children in poverty are greatly at risk for a plague of what Schorr calls "rotten outcomes" (1989) which grow in effect as children age. These children are disproportionately members of minority groups.

While there are many reasons to be concerned about students who do not complete high school, we don't agree about the current magnitude of the problem. The number of students who currently do not complete high school is itself the subject of controversy. No single method of determining how and when to count dropouts is widely accepted. Each state, the U. S. Department of Education and special interest groups such as the Heritage Foundation all report widely varying numbers, based on different methods of counting and their own agendas.

Regardless of the statistical method, however, all reveal two significant problems. The completion rate for students who are black, Hispanic and Native American is significantly lower than for students who are Anglo or Asian across the region, by every method of counting. Also, high school diplomas, by and large, today reflect schooling for an industrial age. They are not preparing students to be productive citizens in the information age.

The future of the nation and the quality of education for the nation's future citizens are interdependent. We all suffer if the schools aren't preparing young people adequately. Therefore, the issues we face as a nation are: How can we be confident that a high school diploma is of value to individual students, to the economy and to society? How do we ensure that the newly valuable diploma is available equitably to all young people, regardless of their ethnic and economic backgrounds? These are the real problems, for which dropout rates are only proxy measures.

Relationship to Goals of the Schools

Public education in America began with a group of parents banding together voluntarily to provide education for their children. Since this voluntary association took place over a limited geographic area, the people who started the community school shared common goals and values. They held common expectations for the behavior of the teacher and the students. They had common notions of the function of the school, one of which was spiritual (education to escape the clutches of that "Old Deluder Satan") and another which was to separate or sort students.

At the beginning of this century, Harvard President Charles William Eliot believed that, "elementary school teachers ought to sort the pupils by their evident or probable destinies" (La Zerson & Grubb, 1974). People who were going to earn a living doing unskilled labor obviously weren't perceived to need a high school diploma. The school's function was to sort out economic winners and losers, forcing those young people who would do unskilled labor directly into the work force at an early age. Although the need for unskilled labor in this country has greatly lessened, and we are less overt about our right to identify winners and losers, the sorting function remains today.

"The research is very clear. Improving school experiences for students at risk improves outcomes for all students."

Schools are to set up to fail certain kinds of students. Organized around white, middle class values, many students of different ethnic or economic backgrounds don't feel welcome. Their dress, appearance, and even the way they have been taught to communicate and reason is mysteriously and subtly "wrong." As the student population has broadened and changed, the gap between what kinds of behavior are expected and tolerated at home and at school widens, as does the gap between parents and teachers.

In many urban areas, there are no longer identifiable single communities that surrounding and supporting the schools and establishing appropriate behaviors and expectations. Students who feel unwelcome, uncomfortable and/or incompetent often react by leaving the situation, either physically (initiating the cycle of truancy/suspension/dropping out) or psychologically.

In addition, the expectations of the schools themselves can contribute to lowered achievement and dropping out, through what Gary Sykes calls "The Deal."

"The Deal can be struck with a few disruptive students or with a whole class. It can pervade an entire school. Its essence is, 'You don't bother me and I won't bother you. You can do only token work. You can spend the hour daydreaming. But do so quietly. So long as you stifle your heartfelt desire to spread disorder, I will give you a passing grade'." (Sykes, 1984).

Theoretically, "The Deal" can go on throughout a student's career and not contribute to the student's leaving. However, students themselves report it is their lack of basic skills and accompanying sense of "I can't do or don't get this" that most contributes to their decision to leave. What also happens is that the student feels the lack of respect, the contempt that underlies this position and comes to recognize that a teacher or system that makes "The Deal" has already abandoned him or her. It should be noted that "The Deal" is expanded for girls to include "I don't expect you to question much, or to do well at male subjects like science or math, so I won't push or encourage you."

At this point, dropping out is merely a physical recognition of a mental and emotional act that has taken place the moment "The Deal" was struck. Dropping out may mean physically leaving school, but it can also mean being only physically and not psychologically present. We need to be concerned about the students who are psychologically dropping out of school, even as they take up desk space and put in the time required for a diploma. We are losing capacity and productivity when all our young people are not challenged, not learning to stretch themselves and aspire to excellence.

What Do We Do to Improve School Experiences?

The research is very clear: Improving school experiences for students at risk improves outcomes for all students. It begins with a psychological shift, a belief that all children can learn and that we can't afford to sort out or throw away anyone. This means holding high expectations for all students (TEA,

undated). Dropout prevention programs are most effective when they are integrated into the general education for all students. Tracking students or grouping at-risk students together in pull-out programs have not proven as effective. Separate programs for at-risk youth can communicate reduced expectations for academic performance.

It's not enough to simply think good thoughts, however. A positive, nurturing and inclusive school culture is a necessary, but not a wholly sufficient condition for educational success. In the final analysis, it is the instructional experiences to which students are exposed and in which they become involved that determine the success or failure of their schooling (Hixon & Tinzman, 1990).

Heterogeneous grouping and cooperative learning, teaching students in groups and teaching them to work in groups and appreciate the contributions of each group member is a much more powerful approach than the bluebird, redbird, blackbird sorting approach.

What Do We Do to Increase the Value of Schooling?

Schooling that is responsive to the emerging information society ought to insure that students will be able to construct knowledge, solve problems and make decisions, collaborate with fellow learners and workers, and pursue learning throughout their lives. This requires a thinking curriculum based on a dual agenda of teaching both content and process (Hixon & Tinzman, 1990).

This thinking curriculum stresses cooperative learning and expanded learning environments. It makes strong connections between academic content and students' prior knowledge and experiences (Hixon & Tinzman, 1990). It also involves business, parents and community resources as the community becomes the focus of study (Haas, Nachtigal & Parker, 1989).

Students drop out, or perceive themselves pushed out, by a system that just doesn't mean anything to them. The lack of connections between the curriculum and what they perceive as "real life" is so great as to be unbridgeable. So they make a decision that seems very clearly to them to be in their self interest--to leave and get about living. This is particularly true of those non-college bound students that have come to be known as "the forgotten half."

If the research on how adults learn is any indication, schools currently do a terrible job teaching young people how to learn. Adults learn and work with one another, cooperatively instead of individually as in the current school model. They work together on complex tasks of significant duration, not tasks that are fragmented and limited by 50-55 minute class periods. They bring to every problem everything they know, not dividing their intellectual resources by saying this is or is not part of the problem. Schools must break down the barriers between education and the world of work, between school and real life.

New curricula and instruction approaches require new methods of assessment based on individual growth and performance. Alternative assessment measures should recognize the value of assessing real performances in real contexts rather than relying on paper and pencil tests (Hixon & Tinzman, 1990). Clear goals and objectives and close monitoring of individual performance by classroom teachers, supported by interventions to

improve learning, can provide the individualized attention that all students, particularly at-risk youth, often require (TEA, undated).

Although education taking place in classrooms and communities where students are learning cooperatively in heterogeneous groups are noisier and seemingly less orderly than children sitting in rows of desks working alone, it is important that the environment promote learning and self-management. Explicit rules for student behavior, measured against clear standards and consistently administered, will establish a successful learning environment for all students (TEA, undated).

"Students drop out, or perceive themselves pushed out, by a system that just doesn't mean anything to them."

Teachers need to be supported as their roles change to facilitating, mediating, modeling, guiding, assisting, sharing, listening and adjusting. Teachers who collaborate with students help them set their own learning goals and guide them toward self-regulation and self-assessment of their own learning. Schools in which teachers are provided with encouragement and the opportunity to share ideas and experiences are schools that also promote the development of high teacher expectations, and teacher involvement with and responsibility for the academic performance of at-risk youth (TEA, undated).

Finally, there is a problem with in-school dropouts, students who are physically present but intellectually and emotionally long gone. An increasing number of students, usually the very bright, creative ones who achieve adequately, although less well than we think they are capable, voluntarily leave when they can't see the relevance in staying in school for their "real lives." To this group we must add the psychological dropouts, those students who don't show up in the statistics but who are deprived of rich learning experiences, nevertheless. They finish school and graduate, but have wasted their time and taxpayers' money by taking up space when more satisfying learning experiences could have been arranged.

Improving instruction for all students means redesigning curricula to make it interdisciplinary. It means redesigning scheduling so students can concentrate on problems of meaningful duration for more than 30-55 minutes at a time. It means redesigning learning so that it takes place in heterogeneous groups of young people working cooperatively. It means redesigning lesson plans so students experience hands-on learning in real situations. It means redesigning the role of the teacher to focus less on crowd control and lecture and more on facilitation and resource providing. It means more time for teachers to plan collaboratively and more decisions made closer to the work. Finally, it means redesigning how we keep score, counting less on paper and pencil rote answers to standardized tests and more on outcomes and evaluations of individual and group performance. That is, after all, what matters.

The notion that a person matters, that he or she is cared for and is expected to succeed, that no one is sorted out or thrown away, undergirds approaches to issues of health, motivation and self-esteem. Programs stressing health and wellness are most effective when they are linked to increasing student self-esteem and are integrated into the regular business of the school (McCombs, 1990). The effects of nicotine on goldfish presented in a science class, for example, provides middle schoolers with the opportunity to make connections with their choices about smoking. Similar opportunities can be found throughout the grades and curriculum to provide hands-on experiences linked to real life situations.

What Can We Do to Foster High Expectations from Home, School, and Communities?

Many young people receive little support from home for completing school. For them and for their parents, education is undervalued. For Native Americans, for Hispanics and blacks, and for many poor white Americans, the school experiences of adults have been so unsatisfactory that there is little reason for them to believe school will be any more useful for their children. Parents who are themselves poorly educated and/or stressed by other factors do not provide early experiences that build academic school readiness or confidence in their children. They often fall short of communicating that learning is important, and that school is the place where important learning takes place.

Educators are often quick to blame parents and cultures other than their own for low expectations of students and little value ascribed to education. These accusations may have some validity, particularly among parents whose own experience with school has been negative. For example, children of parents without a high school education are twice as likely as their schoolmates to be nonreaders (Schorr, 1989).

Parents have important contributions to make to student success. They are, after all, their children's first teachers. It is important to involve parents in positive ways. Schools should create

an atmosphere of trust and mutual regard, stressing authentic, common concerns for children. This begins by increasing parents' confidence and interest in playing an active role in their children's schooling. Three general approaches are

1. *Informing parents of the school's routine standards and expectations.* This can be achieved through messages, meetings or reports on attendance and performance, and increasing teacher understanding of differences in home learning environments, forms of communication and educational expectations.
2. *Recruiting parents to provide input into school program design.* This is typically done through parent advisory councils.
3. *Training and engaging parents in instructional activities, either at school or at home* (Guthrie, Long & Guthrie, 1989).

Obviously, the most powerful is No. 3, when parents and teachers can work together to increase student success. For example, teachers can show parents strategies for assisting with schoolwork. Another approach is to provide educational programs for the parents themselves, including training in child care or parenting, or collaboration on community building and economic development issues that the parents perceive as having direct benefits to them. Many resources are available describing successful parent involvement programs, including the Northwest Regional Educational Laboratory's *Guide to Parental Involvement.*

Fostering High Expectations at School

One of the most powerful interventions on the school level is creating and articulating the belief that all students can learn, although at different rates and at different times (TEA, undated).

The schools' expectations of students have a powerful effect on student achievement, motivation and self-esteem. Creating high, positive expectations is the first step, and is the responsibility of all the people who make up the school district. Developing a mission statement for a school or district provides a vehicle for creating and articulating high expectations and is usually part of a strategic planning process.

Fostering High Expectations in the Community

The successful education of all young people is an important challenge, not just for parents and schools, but for communities. Schools need help. They don't have all the necessary personnel, facilities or resources. Approaches need to be tailored to the community at large, to business and industry, and to other youth serving organizations, including churches, social service agencies and the juvenile justice system.

Communitywide campaigns take on new urgency in this era of school-bashing and an aging population. Fostering high expectations in communities involves making clear to every citizen the stake we all have in well educated young people. In addition, letting young people know that someone cares about them and believes in them is fundamental to making a difference in the problem.

Involving businesses in education must move beyond fundraising and adopt-a-school programs. Businesses also must come up with approaches that let students know the business community cares about them and wants them to succeed. This means discarding large, depersonalized programs and searching for ways to influence students' lives directly. Approaches can include

- volunteer tutoring and mentoring relationships, which allow students to build personal relationships with a successful adult;
- job shadowing, career counseling, employment training, part time jobs and scholarships that tie school experiences with the world of work; and
- training in new skills for faculty and administrators (Guthrie, Long & Guthrie, 1989).

Communities can expand the learning environments for students, and students can reciprocate by learning the pleasures of "giving something back." Approaches that have been successful in the Midwest include

- students conducting community surveys for the Chamber of Commerce to apply for federal funding for a variety of community projects;
- students acting as consultants and doing market research for potential local entrepreneurs;
- students and service club members working together on community betterment projects;
- student-sponsored political debates for local candidates; and
- student designed and created nature trails (Haas, Nachtigal & Parker, 1989).

The key is fostering expectations that students will succeed, that they have important contributions to make to the quality of life in the school and community, and that everyone matters and is cared for by adults. A good resource for successful service projects for students is *High School Community Service: A Review of Research and Programs* (Conrad & Hedin, 1989).

How Can We Make Better Connections Between School Completion and Economic Well-being?

Changes in the labor market demand and in the nature of the economy have rerouted or shut off many routes up and out of poverty.

"Earlier in this century, the routes up and out of poverty were imperfect, and they worked less well for blacks than for whites, but they were plentiful. Most poor and otherwise disadvantaged families lived in an environment that provided day-to-day evidence that hard work, ambition and perseverance brought rewards—reflecting in large part the expanding demands for unskilled labor. One long-term study of white men born in the late 1920s found that those who came from chronically dependent, multiproblem families were indistinguishable, by the age 47, from men of more favored family backgrounds" (Schorr, 1989).

Today, if that study were replicated, the results would be remarkably different. In fact, according to a comprehensive analysis of the nation's report card on student performance, more than 61 percent of variance in test scores can be accounted for by the proportion of a state's children living below the poverty line (OSEDA, 1989).

When employers were local and businesses operated on a small scale, one route out of poverty was to begin working while in school, become a known and valued employee to an employer who took a personal interest in you, and grow into increasingly more responsible positions. When ownership is absentee, employment policies are corporate and centralized, and headquarters are at a distance, that route is closed.

The fastest growing sector in the economy and the source of much labor demand is the service sector which often offers low paying, repetitive jobs requiring little skill and on-the-job training. Service sector jobs have been known as dead end jobs or jobs with flat career ladders. Beginning in the mail room and working one's way up to president of the company may be a legend of the past. Flipping burgers offers the potential of working one's way up to crew chief, but not to owning the franchise.

Some employers use high school diplomas as a screening device for almost every full-time job, whether or not the job requires a high school education. When this

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happens, dropping out does have significant long-term economic disadvantages. For example, across the country, dropouts are seven-and-a-half times as likely as graduates to be dependent on welfare; twice as likely to be unemployed; and twice as likely to live in poverty. In 1986, civilian males age 20-24 who did not graduate from high school had real earnings of $6,853 compared to $10,924 for high school graduates.

"The notion that a person matters, that he or she is cared for and is expected to succeed, that no one is sorted out or thrown away, undergirds approaches to issues of health, motivation and self-esteem."

Unfortunately, we don't make this kind of reckoning part of the education of most young people, and most young people don't figure long-term lifetime earnings like the economists do. Because most of the young people who work use that money for discretionary income, they see the possibility of work right now to be to their immediate advantage.

However, a job that supports a car and new clothes for a student living at home will not support an independent life or a young family.

The economic plight of workers in rural America is particularly grim.

- In 1979, some 31.9 percent of nonmetro workers earned a wage too low to lift a family of four out of poverty even with full-time, year-round work. By 1987, that proportion had grown to 42.1 percent (Shapiro & Greenskin, 1989).
- After adjusting for inflation, the purchasing power of the minimum wage in 1988 was at its lowest level since 1949, and many workers in small businesses and agriculture are not even covered by minimum wage.
- The fastest growing segment of the poor in America are white rural families with two employed wagearners (Shapiro, 1989).

The larger economic picture has a great deal to do with the issue of dropouts. The first issue is that students who grow up in poverty tend to be at risk for school failure before they even begin school. The second is that students who limit their earning potential are limiting the future of their children as well. The third issue is that we need better ways to connect non-college bound students with the world of work. We must make a public investment in the "forgotten half" that is comparable to the one we make in the transition for students who attend colleges.

Finally, our economic future as individuals and a nation requires that we make high school diplomas meaningful. It requires a high school diploma to guarantee that a student has basic reading, writing, communicating and calculating skills; that he or she can solve problems, think creatively and work productively alone and with others. In return for the kind of investment of public funds that this will take, schools should follow-up and warranty their product and provide remediation at no additional cost when an employer certifies a graduate who can't perform to these standards.

In dealing with complex situations like dropout prevention, metaphors are often useful to give us new ways to think about thorny, many-sided situation. Belonging to a golfing club provides an example. You take your clubs and go to the course. If you aren't expert, on any given day or even over your career, you don't get thrown out of the club, nor are your forced or encouraged to resign.

Suppose we thought of schools (or life) as learning clubs. Then we could each come and practice among friends, who would offer helpful advice. There would be a pro for specific lessons. We would each work, throughout our lives, to be our personal bests.

The developmentalists say that play is a child's work. Perhaps the great states of Colorado, Kansas, Nebraska, Missouri, North Dakota, South Dakota and Wyoming can lead the rest of us in thinking about learning, and helping others to continue to learn, as our life's work.

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GOAL 2
SCHOOL COMPLETION

McREL has collaborated with a number of teachers, schools, districts and state departments in the Central Region to design and implement programs and approaches that incorporate the principles above. Examples include the following:

- Expanding the learning environment using the community as a focus of study in Belle Fourche, South Dakota.
- Redesigning courses or curricula to include entrepreneurship education, so students learn to create as well as get jobs. Several South Dakota schools are doing this in a project co-sponsored by the Black Hills Special Services Cooperative and McREL.
- Collaborating with the Wyoming State Department of Education on outcomes-based performance measures for districts.
- Supporting the work of the Governor's Study Commission and the Department of Public Instruction as they ponder the redesign of instructional delivery for the entire state of North Dakota.
- Working with all the middle schools in Wichita, Kan., to write curricula and imple-ment a student advisement program to stem the high minority dropout rate.
- Entering into a long-term relationship with the San Luis Valley in Colorado to create strategic planning capacity in the 14 Valley schools as they raise the achievement and completion rates of Hispanic and Anglo students.
- Creating a teacher skill-building program, Power Teaching, and assisting teachers in St. Louis, Kansas City, Denver and many other sites to enhance the learning of students ethnically different than themselves.
- Providing research-based training to State Department staffs in Kansas and Missouri.
- Commissioning the first analysis of behaviors of faculty members in colleges and universities that limit participation and learning for female and minority students. The study, "The Intellectual Exchange: Excellence and Equity in College Teaching," was sent to every post-secondary institution in the region;
- Serving on the advisory board and supporting statewide Kids at Risk conferences annually in each of the region's states.

GOAL 3: STUDENT ACHIEVEMENT AND CITIZENSHIP

By the year 2000, American students will leave grades four, eight and twelve having demonstrated competency over challenging subject matter including English, mathematics, science, history, geography, and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning and productive employment in our modern economy.

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The focus on student achievement and citizenship as one of six national educational goals is a giant step in the direction of creating a more effective educational system.

This rather complex goal can be subdivided into three major components: (1) increase student competence over complex subject matter, (2) ensure that students learn to use their minds, and (3) engender a sense of responsibility. To accomplish each of these three basic elements will require significant reform within current educational practice.

Increase Student Competence Over Complex Subject Matter

Because of its perceived simplicity, achieving the goal of increasing student competence over complex subject matter is extremely difficult to accomplish. Characteristically, the general public and many educators translate goals related to competence into efforts at greater "coverage" of content. Witness Hirsch's (1987) identification of literally thousands of pieces of information "every student should know" to be culturally literate. Such an emphasis stems from a naive conceptualization of knowledge and competence relative to a given domain.

Recent research and theory indicate that domain-specific knowledge, which comprises complex subject matter such as English, mathematics, science and the like is comprised of two basic types: declarative knowledge and procedural knowledge. Each of these requires specific types of learning.

Declarative knowledge is descriptive in nature. It has been characterized as a knowledge of *who, what, where, when* and *why* (Paris, Lipson & Wixson, 1982). For example, the fact that Olympia is the capital of Washington and the information that water seeks its own level are examples of declarative knowledge.

One of the most important features of declarative knowledge is that it can be organized in a hierarchic fashion. At the bottom of the hierarchy are highly specific pieces of information referred to as "facts." Operationally, facts are comprised of information about specific persons, places, things, events and abstractions. For example, the information that Olympia is the capital of Washington state is a fact.

At the top of the hierarchy are

such general knowledge structures as concepts and principles. Principles are generalizations that are considered rules within a given domain. Like generalizations, examples can be provided for principles. To illustrate, examples can be provided for the principle that water seeks its own level.

Concepts are equally general ideas such as "democracy" and "equilibrium" that organize large blocks of information within a given domain. Between the two ends of the hierarchy are types of knowledge such as causal networks, episodes, time sequences, all differing in their level of generality and therefore occupying different positions within the hierarchy.

What is most important about the hierarchic nature of declarative knowledge is that competence in a given domain is first and foremost a matter of understanding the top level information. That is, competence in science is a matter of understanding the concepts and principles within science. Competence in geography involves a knowledge of the concepts and principles within geography. This is not to say that facts and other lesser structures are not important. However, it is to say that these lower order structures should be organized by concepts and principles.

Instructionally speaking, this means that concepts and principles should be the focal point of content-area instruction with facts and other structures given lesser emphasis. Unfortunately, this is not the case in most American classrooms. In fact, current research indicates that most content-area instruction is characterized by an emphasis on lower-order pieces of information (Doyle, 1983). Fostering student competence in complex subject areas, then, will require an instructional and curricular shift in emphasis from lower-order specific pieces of factual information to higher-order, more general concepts and principles. Fostering competence will also require an emphasis on procedural knowledge.

"Fostering student competence in complex subject areas will require an instructional and curricular shift in emphasis from lower-order specific pieces of factual information to higher-order more general concepts and principles."

Procedural knowledge has been characterized as a knowledge of "how to" (Paris, Lipson & Wixson, 1983). More correctly, it is a knowledge of and the ability to perform specific processes important to a given domain. For example, there are cognitive processes such as reading a specific type of map which are important to the domain of geography. Likewise, cognitive processes such as solving equations are important to the domain of mathematics. Virtually every domain has important procedures, a knowledge of which is a requisite for competence within the domain.

Unfortunately, procedural knowledge is not commonly taught as an integral part of most complex content areas. In fact, outside of the areas of mathematics and science, the direct teaching of procedural knowledge is almost non-existent. This stems from the fact that domain-specific procedures, once mastered, are performed at the level of automaticity (Fitts, 1964). The expert uses them with little effort and almost no conscious thought.

Although automaticity is necessary for competence within a domain, it is not an easily attained state by a learner. Specifically, research indicates that when learning a complex process, most students need a fairly detailed model of the process that, with practice, they can gradually adapt to their own styles and needs (Anderson, 1983; Fitts, 1964). Trying to perform a process at the level of automaticity when first learning it can actually inhibit learning.

Automaticity can also work against good instruction. A teacher can no doubt perform the important procedures within a domain with little effort or thought. However, it is this very competence that can blind the teacher to the procedural needs of students. That is, the teacher can perform the procedure with such ease that he or she might be blinded to the needs of certain students to receive detailed modeling and in-depth instruction in the procedure.

It is this phenomenon that makes some experts in a field ineffective teachers within that field. They cannot think like the novice when it comes to important procedures within the content. To ensure students' competence in complex subject areas will require a curricular and instructional shift to highlighting and systematically teaching important but oftentimes transparent procedures within the target content areas.

Ensure Students Learn to Use Their Minds

Reaching the goal of students learning to use their minds parallels the goal that students achieve competence in the procedural knowledge within a given domain. Both require the acquisition of strategies. A person who has learned to use his or her mind well has learned and internalized specific cognitive processes or "strategies" such as strategies for making complex decisions or strategies for solving problems.

Recently, a number of efforts have been made to identify the

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GOAL 1
READINESS

By the year 2000, all children in America will start school ready to learn.

OBJECTIVES

- All disadvantaged and disabled children will have access to high quality and developmentally appropriate preschool programs that help prepare children for school.
- Every parent in America will be a child's first teacher and devote time each day helping his or her preschool child learn; parents will have access to the training and support they need.
- Children will receive the nutrition and health care needed to arrive at school with healthy minds and bodies, and the number of low birthweight babies will be significantly reduced through enhanced prenatal health systems.

GOAL 2
SCHOOL COMPLETION

By the year 2000, the high school graduation rate will increase to at least 90 percent.

OBJECTIVES

- The nation must dramatically reduce its dropout rate, and 75 percent of those students who do drop out will successfully complete a high school degree or its equivalent.
- The gap in high school graduation rates between American students from minority backgrounds and their non-minority counterparts will be eliminated.

GOAL 3
STUDENT ACHIEVEMENT AND CITIZENSHIP

By the year 2000, American students will leave grades four, eight and twelve having demonstrated competency over challenging subject matter including English, mathematics, science, history, geography, and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning and productive employment in our modern economy.

OBJECTIVES

- The academic performance of elementary and secondary students will increase significantly in every quartile, and the distribution of minority students in each level will more closely reflect the student population as a whole.
- The percentage of students who demonstrate the ability to reason, solve problems, apply knowledge, and write and communicate effectively will increase substantially.
- All students will be involved in activities that promote and demonstrate good citizenship, community service and personal responsibility.
- The percentage of students who are competent in more than one language will substantially increase.
- All students will be knowledgeable about the diverse cultural heritage of this nation and about the world community.

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CATION GOALS

GOAL 4
MATHEMATICS AND SCIENCE

By the year 2000, American students will be first in the world in mathematics and science achievement.

OBJECTIVES

- Math and science education will be strengthened throughout the system, especially in the early grades.
- The number of teachers with a substantive background in mathematics and science will increase by 50 percent.
- The number of U.S. undergraduates and graduate students, especially women and minorities, who complete degrees in mathematics, science and engineering will increase significantly.

GOAL 5
ADULT LITERACY AND LIFELONG LEARNING

By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

OBJECTIVES

- Every major American business will be involved in strengthening the connection between education and work.
- All workers will have the opportunity to acquire the knowledge and skills, from basic to highly technical, needed to adapt to emerging new technologies, work methods, and markets through public and private educational, vocational, technical, workplace or other programs.
- The number of quality programs, including those at libraries, that are designed to serve more effectively the needs of the growing number of part-time and mid-career students will increase substantially.
- The proportion of those qualified students, especially minorities who enter college; who complete at least two years; and who complete their degree programs will increase substantially.
- The proportion of college graduates who demonstrate an advanced ability to think critically, communicate effectively, and solve problems will increase substantially.

GOAL 6
SAFE, DISCIPLINED, AND DRUG-FREE SCHOOLS

By the year 2000, every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

OBJECTIVES

- Every school will implement a firm and fair policy on use, possession and distribution of drugs and alcohol.
- Parents, businesses and community organizations will work together to ensure that schools are a safe haven for all children.
- Every school district will develop a comprehensive K-12 drug and alcohol prevention education program. Drug and alcohol curriculums should be taught as an integral part of health education. In addition, community-based teams should be organized to provide students and teachers with needed support.

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important mental strategies involved in effective use of the mind (Sternberg, 1985). Although the names used for these strategies are diverse, most lists include and highlight the following: problem solving, decision making, scientific inquiry and invention. In short, these mental processes must be mastered if a learner is to use his or her mind to be a productive member of society.

As is the case with content area procedural knowledge, strategies for these forms of cognition must be taught. The research on strategy instruction is very promising. A plethora of studies have shown that students' performance in these areas can be improved with direct strategies instruction (Derry & Murphy, 1986). Students who benefit most from such instruction are those who characteristically do not do well academically. Unfortunately, like content-area procedural knowledge, strategies in these areas are seldom a formal part of the curriculum.

In addition to overt strategy instruction in decision making, problem solving, scientific inquiry and invention, effective use of the mind involves dispositional thought. Resnick (1987) has noted that the most effective type of thinking is that which is driven by specific mental habits. These mental habits fall into three broad categories: self-regulation, critical thinking and creative thinking. Specific dispositions within these categories are

Self-Regulation
- Being aware of one's own thinking
- Planning
- Using available resources
- Being sensitive to feedback
- Evaluating the effectiveness of one's thinking

Critical Thinking
- Being accurate and seeking accuracy
- Being clear and seeking clarity
- Avoiding impulsivity
- Taking a position and defending it
- Being sensitive to the level of knowledge and the feelings of others
- Being open-minded

Creative Thinking
- Engaging intensely in tasks even when answers or solution are not apparent
- Pushing the limits of one's knowledge and abilities
- Generating and following one's own standards of evaluation
- Generating new ways of viewing situations outside the boundaries of standard conventions

To illustrate, an effective thinker will frequently stop what he or she is doing to plan next steps and reflect on what is working or not working. An effective thinker will also strive to seek accuracy and will commonly push to work at the edge, versus the center, of his or her competence. In fact, it is operating from these dispositions that makes one's thinking higher order in nature (Resnick, 1987).

While strategies can be taught for the cognitive processes of problem solving, decision making, scientific inquiry and invention, the habits of mind are fostered by constant reinforcement. This means that the teacher continually interacts with students about the use (or lack thereof) of the dispositions. Such instruction requires more one-to-one contact between teacher and student and characteristically changes the role of teacher from "provider of information" to that of "coach."

To operationalize this change in role, students must engage in relatively long-term tasks so that a teacher might interact with them about such dispositions as planning and seeking accuracy. This implies that the problem solving, decision making, scientific inquiry and invention tasks in which students engage should be long-term in nature—a week, two weeks or a semester. This would allow the teacher to observe many, if not all, of the dispositions of higher-level learning and interact with students about them.

In summary, to accomplish the goal of ensuring that students use their minds effectively, curriculum and instruction must include attention to the mental processes of decision making, problem solving, scientific inquiry and invention, along with specific strategies for their execution. These tasks should be relatively long-term so that teachers can focus on students' use of specific habits of the mind in the areas of self-regulation, critical and creative thinking.

Engender a Sense of Responsibility

Probably the most difficult aspect of the governors' goals on student achievement and citizenship is engendering a sense of responsibility. Although the term *responsibility* is frequently used in discussions of educational goals, it is seldom defined. According to the Random House Unabridged Dictionary, responsibility means "answerable or accountable, as for something within one's power, control or management" (p. 1641). Restated, responsibility is behaving as though you are accountable for what happens to you. Such a perspective is not common within the general public and even more rare within education.

People in general seldom operate from the perspective that they are accountable for what

happens to them and, within education, students are rarely presented with this perspective. Teaching responsibility, then, means that students must first be presented with the perspective that they can function "at cause" to what happens to them. Research and theory indicate that such a sense of "agency" can drastically affect performance (McCombs, 1984). In short, if one feels he can make a difference in himself or herself or in surrounding circumstances, the person usually does.

Once students have been presented with the principle of personal causality, they should be provided with opportunities to exercise that principle. They should be provided with opportunities to control tasks in which they engage in terms of how they are performed, when they are performed and how they turn out. Again, this is not the norm in modern American education. Rather, research indicates that most classroom tasks are highly teacher directed and almost fully specified, leaving students with little, if any, opportunity to control their execution or outcome (Fisher & Hiebert, 1988).

Operationalizing the opportunity for student control implies that students have control over the decision making, problem solving, scientific inquiry and invention in long-term tasks they engage in. They should be allowed to select the type of tasks they will engage in, identify the products of these tasks and the manner and time frame in which they are to be carried out.

The Goals Can Be Attained

The governors' goals relative to student achievement and citizenship can be accomplished by the year 2000. However, this will require considerable change in the present system. To accomplish the goals, we must shift instructional focus from lower-order factual information to more general and all encompassing concepts and principles. At the same time we must focus education on important content area procedures with attention paid to modeling and systematically teaching students strategies for these procedures.

In a related vein, accomplishing the governors' goals will necessitate an instructional emphasis on strategies for such complex mental processes as decision making, problem solving, scientific inquiry and invention. Tasks in which students engage to practice these important mental operations should be long-term so that teachers can observe and interact with students about their use of the mental habits of self-regulation, critical and creative thinking. Finally, students should have a high degree of control over these tasks so that they can develop the sense of personal agency necessary for responsible citizenship.

GOAL 3
STUDENT ACHIEVEMENT AND CITIZENSHIP

Selected McREL programs and services that deal with student achievement include:

Dimensions of Learning - a program that incorporates elements of education's most effective instructional programs into a unified system. *Dimensions* helps educators understand the mental processes that accompany learning so that teachers can more easily select and plan instruction to fit the goals of their classroom.

Vocabulary Data Base - contains over 12,000 words organized in semantic clusters with information on
(1) the recommended grade level for learning the word,
(2) the first appearance of the word in content reading material and
(3) the grade level at which the word first appears on a standardized test.

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GOAL 4: MATHEMATICS AND SCIENCE

By the year 2000, U.S. students will be first in the world in mathematics and science achievement.

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Dr. West has an extensive background in mathematics, research, training and evaluation. For many years she developed and evaluated technical training materials for the Department of Defense. She conducted the evaluation of the National Science Foundation's Women in Science program and is active in programs that stimulate opportunities for women and minorities in mathematics and science.

Aside from its commitment to achievement, what is immediately striking about this goal is that it is couched in the language of competition and national prestige. It suggests neither an absolute nor currently quantifiable goal. Further, even the relative achievement is not expressed in language precise enough to be confident of its meaning.

For example, is the goal for the average achievement of *all* U. S. students to be superior to all others, or that our nation's most outstanding mathematics and science students will excel even more than superior students in other countries? And how do we measure "superior"? The former places the emphasis on raising mathematical and scientific literacy for all students. The latter puts emphasis on advanced mathematics and science education for talented and gifted students.

Given the fundamental U. S. philosophy about education in a democracy, we may be competing in an unfair and unreal contest in the short term. In the longer term, it is probably more reasonable to predict that raising national literacy and interest will stimulate achievement at all levels.

Given these ambiguities in the statement of goal, it is especially important to look at the specific objectives identified by the governors for more information about their intent:

- Strengthen math and science education, especially in the primary grades.
- Increase the number of teachers with adequate math and science backgrounds by 50 percent.
- Significantly increase the number of women and minority students who complete degrees in math, science and engineering.

Let's ignore, for the moment, the competitive language of the goal. If we look at the probable intent as inferred from the specific objectives, we see a much clearer commitment toward improving math and science education for all students. We also see math and science careers—both teaching and non-teaching—becoming attractive and achievable to a broad population of Americans. Implicit in the goal is the recognition of the need for math and science expertise in order to compete successfully in the world economy.

Improved Math, Science Programs Essential

Improved mathematics and science education is a national priority. Not only must we encourage more students to study mathematics and science for career preparation, but we must be sure all students are prepared to function in a society heavily dependent upon mathematical concepts, skills and the resulting technologies (Madison, 1990; Carnevale, 1988). Mathematics

has long been identified as the most critical single subject matter necessary for advanced studies in science, engineering, architecture and a host of other important occupations.

But many a bright and capable student has changed career interest from math and science to law or another field because the door to science and the technical professions was virtually closed as early as seventh grade. In these cases, it is obvious that early education did not take advantage of the natural curiosity and interest most children have in math and science. From the career scientist to the intelligent consumer, it is absolutely essential that the interest and literacy levels of all students be raised.

The importance of mathematical literacy to the economic and social health of the nation as well as to the individual is obvious and well documented (NCTM, 1989; AAAS, 1989; NRC, 1989). Getting elementary school children interested in mathematics and science is not difficult. Children begin life with an appetite for learning, and numeracy and physical science principles are especially relevant and interesting to inquisitive and energetic minds. However, if these children develop a negative attitude toward mathematics and science when they are young, they will not have the necessary backgrounds, abilities or interests to make appropriate choices about these subjects when they reach secondary school.

The problem can be even greater for low socioeconomic, low-income minority and female students whose family experiences, learning styles and self-concepts often militate against interest in mathematics and science. Very little about the current curriculum and instructional practices of the typical school enhances early interest and ability. Further, even among children who like math and do well in elementary school, there is a significant decrease in achievement and interest in seventh and eighth grades.

Middle school is frequently the period during which the scientific performance of many successful students of all races and both genders begins to degrade. Boring, repetitive curricula are often blamed for this phenomenon. But, according to the National Council of Teachers of Mathematics Curriculum and Evaluation Standards Committee (1989), "mathematics is a useful, exciting and creative area of study" that should be appreciated and enjoyed throughout the middle school years. A curriculum that takes

advantage of the curiosity and energy of the middle school child offers students a way to investigate and understand the world around them.

The committee also stated, "instruction has emphasized computational facility at the expense of a broad integrated view of mathematics and has reflected neither the vitality of the subject nor the characteristics of the students." Science education, with its emphasis on the classroom laboratory and, in some instances, the community as a laboratory, has been somewhat less guilty of this process.

Several teaching principles reflect the needs of the young, pre-adolescent and adolescent student. These include:

1. *Every child needs and can learn science and mathematical skills and concepts.* The acquisition of numeracy and abstract reasoning skills are complementary, readily obtainable and absolutely essential for all youngsters. A successful curriculum anticipates that scientific processes and principles are of sufficient interest and need that all children will acquire them if they are motivated and encouraged within a supportive and creative environment.
2. *Students should not be denied access to a particular topic because they have not yet mastered some previous topic.* Mathematics and science lessons should be relatively self-contained and assume only a minimum of prior knowledge by the student. For example, if a module is concerned with velocity, it should not be assumed that the young student remembers that velocity is distance divided by time.
3. *Most students learn mathematics and science—or for that matter any subject—if they can write or talk about the topic at hand.* A student who explains to another student how to convert velocity from yards per second to miles per hour learns more easily through the process of explanation (Zinsser, 1988). Reading, writing and oral assignments must be incorporated into the teaching materials.
4. *The application should dictate the topics studied.* Thus, if a problem in determining authorship of a novel requires a study of elementary statistics, then elementary statistics becomes a topic for study. A substantial amount of planning and creativity goes into the development and teaching process in order to preserve this operational flexibility. The result is that the scientific and mathematical principles required for application are developed as needed.
5. *Science and mathematics education represent only a part of a student's needs.* We contribute to success in high school and beyond by helping youngsters to think critically and logically, to develop healthy egos, to be active participants, to integrate subject matter in order to solve problems, and to take tests successfully. We can also increase their ability to excel in the sciences and to pursue a broad range of career and lifestyle options.

Along with the general age and status-related concerns of the school child are the special needs of girls, minority students, the urban poor, suburban and rural students and the slower and gifted students, each of whom may have additional identifiable educational and social needs. Schools should help students discover and develop scientific concepts and skills in a variety of situations that promote self-direction

and achievement. These skills must also recognize individual and group differences in learning styles and abilities which are based on cultural diversity, social conditioning, and individual abilities and preferences.

Women, Minorities Scarce in Math-Science Fields

The scarcity of women and minorities in math-and science-based professions has given rise to a number of special studies of the needs of girls, blacks and Hispanic students. Many of these programs identified problems that have since been shown to exist in the general population (Rotberg, 1990). The scope of the curriculum, the materials, and the teacher preparation and support provided by the schools must exhibit the objectives of a redesigned school structure. Schools must reflect the general philosophy that all children benefit from increased sensitivity to individual differences because language deficiencies, math anxiety, experiential deprivation and scientific genius exist in all populations and in all neighborhoods.

An appropriate curriculum anticipates and expects that all children can learn and can achieve a significant level of success. In order to maximize this level, schools must offer situational contexts that emphasize the familiar. For example, girls who have experienced gender conditioning could measure the stroke of a sewing machine needle as well as an engine piston. Or consider a spatial problem involving the use of fashion or foods as well as the more traditional construction and blueprints.

The special needs of black children are identified as distinct from the needs of the disadvantaged. Although a significant percent of black families are economically disadvantaged, not all disadvantaged students are black or another minority. In addition, not all blacks are economically disadvantaged. Recent research indicates that the understanding and use of common prepositional phrases by first generation middle and upper-middle class blacks whose extended families utilize "black English" syntax belies their appearance and overall performance. This language difference can lead to errors in problem modeling and inappropriate calculations (Orr, 1987).

A curriculum with a situational-based philosophy makes a minimum of assumptions about the lifestyles and experiences of its students. Tailored teacher training and resource guides can suggest appropriate examples, games, stories and problems. Those for whom English is a second language may benefit from the use of explicit written rationalization to clarify thinking processes confused by language deficiencies and differences.

Many students come to school with anxiety about science and math. Teachers and curricula that cater to a student's interests and strengths (anything from writing skills to manual arts to physical activities) help to free science from the rigidity and, for some, anxiety-producing context of facts and single right answers.

The opportunities for presenting and exploring scientific concepts within larger contexts and for using non-scientific emphases or end objectives such as substituting environmental objectives can be extremely effective in fostering a less anxious attitude toward math and science (West & Lantz, 1978). It is also appropriate to increase students' awareness of career options within the curriculum, building their interest in science-related fields. By identifying black, Hispanic and female role models, we can create enthusiasm for mathematics and science.

Abilities and Interest Lie on Continuum

Every classroom or learning group has students whose abilities and interests lie along a continuum. For those who are considerably slower or faster, less or more capable than their peers, schools need to provide ample opportunities to achieve success and be challenged at many levels. Materials should be suitable for use in cooperative learning situations where students work in pairs or small teams and learn from one another.

"...many a bright and capable student has changed career interest from math and science...because the door to science and the technical professions was virtually closed as early as seventh grade."

In larger groups, a division of responsibility affords opportunities for contributions while reinforcing procedures and skills and exposing all children to different problem-solving processes. Individual assignments challenge individuals to go as far as they can in understanding concepts, recognizing patterns and developing models to solve problems. Teachers should be coached and given the resources to be able to assist and to stimulate their students.

Emphasis on the integration of science education with other disciplines is a natural result of the assumption that students learn what they need to know and that mathematics and science knowledge is essential for everyone.

One concern has been the use of the "application to topic" model. This model raises the possibility that time and energy will be taken away from science and devoted to other areas such as language and sociology. The concern is that the requirements of the curriculum, as reflected in standardized tests, will not be met. It has now been observed and is confirmed by experience that raising the scientific awareness of our students and motivating them to apply scientific principles to solve problems enhances their achievement of traditionally acquired skills. It more than compensates for the use of "science time" spent in other subject areas.

The school reform movement encompasses issues ranging from teacher tenure to school day length to site-based management. Despite hard work, personal commitments and increased funding, schools are failing a large segment of the population. It is unlikely that the traditional classroom model, as it currently exists in most schools, will not be challenged and changed. Most researchers talk about a more open, less structured environment with additional opportunities for community, business and family involvement. Also, a less structured grading process that fosters individual achievement at individual rates, and a less passive, teacher-dominated learning situation are possible elements of school reform.

Community Resources Should be Tapped

However these changes evolve over time and across different communities, modifications to curriculum, physical surroundings or administration need to be conceived and constructed to be appropriate for a changing environment. More important, even incremental changes should foster the objectives of restructured education within whatever paradigm it is eventually used. Schools should encourage teachers to work together and with their students to investigate problems and collect, reduce and analyze data by proposing activities requiring the combined application of scientific and other skills.

The use of community resources may require out-of-school contacts and out-of-classroom facilities for group activities. This type of curriculum puts substantial demands upon the time, energy and creativity of teachers who have been trained and who have been teaching in typical classrooms. It raises additional risks for administrators who are responsible for establishing and overseeing the learning environment.

Abundant planning and resources are required for operating within a less predictable and secure environment, and for providing the motivation and incentive to use curriculum in this fashion. School planners and curriculum developers must anticipate use across a variety of situations and induce presentation flexibility for maximum individual discovery.

Planning, Training Key to Success

When the "new math" of the 1960s was first introduced, it was based on many of the same principles advocated here—an emphasis on reasoning, problem solving and conceptual understanding as opposed to rote learning and memorization. There were a number of reasons that its use did not universally result in the greater achievement predicted. The individual concepts, such as set theory, were almost never presented as part of a total curriculum, and what was available was frequently poorly understood and poorly executed. In retrospect, two of the most damaging weaknesses were inadequate teacher/parent orientations and inadequate teacher

preparation and support. In order to achieve the governors' goals for math and science, we need a school philosophy that stresses planning partnerships, teacher training and follow-up support with emphasis on the role of parent participation and the development of a combination of subject matter and pedagogical aids.

"Teachers and curricula that cater to a student's interests and strengths help to free science from the rigidity and, for some, anxiety-producing context of facts and single right answers."

Researchers often point to teacher stress as a major problem in creating or exacerbating student stress (Miller, 1987). To achieve the education goals, the emphasis of the schools must be on helping children to enjoy mathematics and science, to feel successful at them, and to help children to develop a strong conceptual understanding and acquire skills according to individual needs.

One of the ways to assist in this process is to provide a stimulating environment that promotes self-esteem while meeting curriculum needs. And among the best ways to help ensure this environment are parent/teacher/community partnerships and teacher preparation and support. The unstressed teacher who feels comfortable with his or her subject matter and ability to teach and who has the necessary tools to do a good job, can better assist children in their personal development as well as their subject matter achievement.

It may seem more direct to emphasize recruitment of math and science teachers, to increase time spent in science and science-related courses, to cram in more topics and to push achievement by increasing the demands of standardized tests and college entrance requirements. However, there is a limit to what we can achieve with these techniques alone. By affirming our belief in the ability and desire of each child to learn and in the excitement and relevance of science and math within a supportive and nurturing environment, we make all the other goals and objectives not only possible but infinitely more probable.

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GOAL 4
MATHEMATICS AND SCIENCE

Examples of the kind of work McREL is doing to support National Education Goal 4 include the following:

CSMP 21 **- a project designed to enhance and update McREL's popular Comprehensive School Mathematics Program. CSMP 21 includes strong science and technology components and tools to help develop the necessary interest and enthusiasm among all students, with particular emphasis on minorities and females.**

Comprehensive School Mathematics Program (CSMP) Developer/Demonstration Project **- This ongoing project provides support services to users of CSMP by supplying publications, and providing awareness workshops, parent information and implementation assistance.**

Elements of Mathematics **- a program designed for seventh-to twelfth-grade students of superior mathematics and reasoning ability.**

Rural Science and Math High School Without Walls **- a project that creates and demonstrates a model for improving the quality and variety of science and math instruction in rural America. Using technology and partnerships among rural small schools, universities, SEAs and public and private resource agencies the "high school without walls" is able to**

(1) expand course offerings,
(2) provide generalist teachers with a content specialist for instruction in advanced courses and
(3) provide ongoing professional development opportunities for teachers in rural schools.

GOAL 5: ADULT LITERACY AND LIFELONG LEARNING

By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

Linda Brannan is an information management specialist for the Mid-continent Regional Educational Laboratory. Her work focuses on the application of advanced technology to training, learning and information systems.

Ms. Brannan has been instrumental in the development and production of a variety of training and learning projects, most recently a computer-based instructional program for mildly handicapped young adults to develop job and social skills. She is currently conducting a project to incorporate sound into a computer-based instructional program for adult literacy.

By selecting adult literacy and lifelong learning as a national educational goal, the governors have chosen to address a problem harboring serious and far-reaching ramifications either directly or indirectly affecting all Americans.

In recent years, members of the education and labor communities have voiced increasing concerns about the literacy of our adult population. Our concern for the literacy of our population is in part an outgrowth of our general belief that all people ought to be able to read, write and use basic mathematics in order to more fully realize their human potential.

However, to a large extent our concern for developing a more literate population is based on another, more practical set of considerations. These considerations relate to inexorable demographic changes, changes in the nature of the workplace, and the increasingly serious societal consequences of inadequate basic skills.

Just how serious is the problem of illiteracy in the United States? In *Issues and Trends in Adult Basic Education*, F.A. Karnes et al. (1980) reported that as many as 64 million American adults may be considered illiterate. The Southport Institute's 1989 report (Chisman, 1989) on the federal role in adult literacy stated that of the 100 million workers who are adults today and who will still be in the workforce by the year 2000, tens of millions are seriously handicapped in their work and in their everyday lives by a lack of basic skills.

Immigrants Contribute to Illiteracy Problem

This report adds yet another dimension to the problem of illiteracy in the United States: the difficulties of the millions of immigrant and Hispanic Americans who have limited proficiency in English. Immigrants and Hispanic Americans are the fastest growing segments of our population and workforce, and unless significant attention is devoted to addressing their language and educational needs, the potential exists for major economic and social consequences.

Evidence indicating drastic changes in the American population and its workforce has been accumulating steadily over the past decade. The Hudson Institute's seminal report on the future of the American workforce, *Workforce 2000*, contains the following information about the changing nature of the American workforce:

- The decline in population growth will mean an older workforce, with the average age of workers increasing from 36 to 39 by the year 2000.

- The number of young workers will decline both relatively and absolutely. Workers aged 16 to 34 accounting for half the workforce in 1985, will decline to less than 40 percent by the year 2000.
- Eighty percent of new entrants into the workforce will be women, minorities and immigrants.

Not only is the workforce changing, but the nature of tomorrow's jobs is changing as well. The majority of new jobs will require some postsecondary education for the first time in history. Only 27 percent of all new jobs will fall into low skill categories, compared to 40 percent of jobs today. Jobs in the middle of the skill distribution today will be the least skilled occupations of the future.

In their joint publication, *The Bottom Line*, the U.S. Department of Education and the U.S. Department of Labor predict that about 90 percent of new jobs created through 1995 will be in services. The report states that new technology has changed the nature of work — created new jobs and altered others— and in many cases, has revealed basic skills problems among experienced, older workers where none were known to exist before.

The U.S. Department of Education's *Workplace Literacy Fact Sheet* states that life cycles for products and processes have been shortened, and future jobs may be restructured about every seven years, necessitating continuous learning and reskilling in order to develop qualified people for available jobs. Increasingly, the basic skills required for successful entry into and retention in the workplace will extend beyond the employee's formal academic training in reading, writing and computation to encompass more highly developed listening skills and an understanding of basic job-related vocabulary.

Illiteracy Affects Productivity, Retention

Writing for the Congressional Research Service in 1988, P.M. Irwin speaks to the societal consequences of poor literacy skills: lack of employment, limited income, low job status and lack of self esteem. He goes on to say that limited basic skills among the employed can result in significant costs to employers, including low productivity, accidents, employee errors and extra training costs.

"Ironically, as higher levels of literacy are required for successful entry and retention in the workforce, there appears to be a decided decrease in the level of literacy among significant portions of the population."

Retention is also a problem. The annual turnover rate across all industries is 80 percent, while in the restaurant industry, which traditionally employs many low-skilled workers, the annual turnover rate is a staggering 250 - 300 percent (Arlington County, Virginia, Public Schools, 1989). Dunn-Rankin (1989) adds limited upward mobility of workers to the list of consequences to employers of low-literacy employees. Chisman asserts that these economic aspects have added a new sense of urgency to longstanding concerns about illiteracy.

Changes in population characteristics coupled with the increasing literacy demands of even the most minimal employment has prompted increased concern about the level of literacy of many Americans. The Clearinghouse on Adult Education's *Literacy Fact Sheet* states that while the overwhelming majority of young adults adequately perform lower level literacy tasks, sizable numbers appear unable to do well on tasks of moderate complexity. As tasks become more complex and challenging, the decline in achievement is most pronounced for young adults who terminate their education early and for minority group members.

Ironically, as higher levels of literacy are required for successful entry and retention in the workforce, there appears to be a decided decrease in the level of literacy among significant portions of the population.

Clearly the United States faces a serious problem in meeting its need for a sufficiently literate population and workforce — a problem that can in part be addressed through appropriate educational opportunities. A number of federal initiatives have focused on addressing this need. The Adult Education Act provides for special adult education demonstration and teacher training programs. The U.S. Department of Labor provides funding through the Job Training Partnership Act. The Welfare Reform Act of 1988 calls for increased attention to education and training as a means of reducing welfare rolls. The Food Stamp Act requires that Food Stamp recipients participate in education and training programs leading to employment.

Unfortunately, these programs attempt to address the problem after the fact. Many recipients of benefits under these programs are receiving public assistance because they are unable to obtain and keep adequate employment due to inadequate basic skills and job skills. It seems to make sense to provide adequate education and training for these individuals before they become welfare recipients. This is a serious and daunting challenge for schools at all levels.

Business and Schools Critical to Meeting Goals

The idea that business and schools must work together to achieve higher levels of literacy among youth receives much support at high levels of the federal government. The Department of Education's Office of Private Sector Initiatives was established specifically to identify ways for the private sector and the education community to work together. The Department of Labor recently convened the Commission on Achieving Necessary Skills, a committee representing schools, business and government. The Commission will identify skills youths need in order to successfully enter a number of occupational fields, propose minimum proficiency levels in various subjects, and distribute this information to schools and businesses.

States have also become actively involved in programs to stem the tide of inadequately prepared youth entering the job market. For example, the New Jersey Youth Corps works with school dropouts ages 16 through 25. Participants in the program spend half the day working on community service projects and attend classes for the other half of the day. Preliminary figures show this program has about double the success rate of other similar programs.

Achieving the governors' adult literacy goals will require the involvement and cooperation of the public schools, post-secondary institutions and the business community. The schools will have to become increasingly responsive to the needs of the business community and focus programs and expectations on the knowledge and skills students will need in order to be competitive in the workplace.

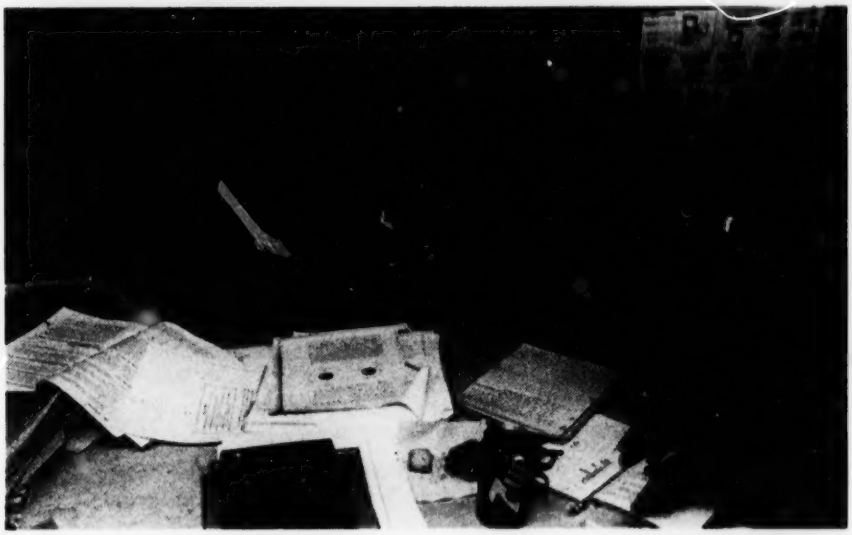
Businesses must become more active partners in K - 12 and in continuing education efforts both within and outside of the workplace. Colleges, universities and technical schools must also look to the needs of the workplace in designing programs to best prepare people for working life. More generally, educational institutions must do a better job of communicating the economic and practical importance of both basic skills and advanced training to students at all levels.

Business-school partnerships should also extend beyond better communication and direct classroom activities. For example, in Prince George's County, Maryland, businesses have united to help attract teachers to schools in poor neighborhoods by offering rent assistance and discounts with local merchants. The schools in these neighborhoods have responded by developing new programs to guarantee that graduates have entry-level business skills.

Labor Secretary Dole sees business-student mentoring programs as an effective strategy for reducing the number of dropouts and high school graduates who enter the job market with inadequate skills. In Cincinnati, a mentorship program was implemented by Woodward High School, a school with 85 percent minority enrollment, and Proctor and Gamble. Students in the mentoring program typically score a full letter grade higher than their peers who are not in the program.

The U. S. Chamber of Commerce recently published *Improving Public Education: Why Is It My Problem?* which addresses ways in which local Chambers of Commerce can work with schools to better prepare people for entry into a competitive workforce. The Chamber suggests a number of strategies for businesses to work with schools, including summer jobs, mentorships and work-study arrangements. Some local Chambers, including those in Dalton, Georgia, and Rochester, New York, actively participate in dropout prevention programs, in part by helping students understand the value of staying in school.

Some businesses have devised highly creative and beneficial ways of working with schools. Blue Cross and Blue Shield worked with the high school in Tarrant, Alabama, to convert a classroom into an insurance claims office. Students work part time processing insurance claims and in the process learn valuable business skills, gain work experience and earn money.



Schools also must and have shown great creativity in designing programs for working with business. For example, Maricopa Community College in Arizona has established a business services division that acts as a broker between the school and employers. The goal of this and similar programs is to inform teachers and curriculum developers about business needs; identify jobs for graduates; acquire support from businesses in terms of grants, equipment, internships and other training opportunities; and alert employees of businesses to continuing education available through the school. Some schools have contracted with businesses to provide job-specific training to company employees.

College Education Becoming More Critical

More than ever before, a college degree is a critical element to economic success. The gap between average earnings of male high school graduates and male college graduates has tripled since the early seventies. This is attributed to the decline in well-paid manufacturing jobs that do not require higher education, coupled with an increase in high technology and information industry jobs that require at least some post-secondary education or training.

While post-secondary education is more important than ever, the traditional population of college students, 18 to 21 years of age, is declining. One could surmise that the decline in traditional college-aged students would result in a decline in college enrollments. However, this decline in the young adult population is occurring along with a record college enrollments. While a higher percentage of high school graduates is entering college, keeping the number of young people entering college relatively stable, the most significant increase in college enrollment has been older students.

This shift in enrollment patterns places new demands on colleges and universities. Students are more likely to be part-timers, attending school during the evenings and on weekends, while trying to balance the demands of employment and child-rearing. More and more, post-secondary institutions are being called upon to provide more flexible scheduling and special services for these nontraditional students.

Training in Interpersonal, Communications Skills Critical

It has been common thought for some time that employers don't care about grades. Many non-college bound students believe that the quality of their school work and the grades they receive will have little or no impact on their immediate earning potential. For the most part they are right. In light of this, it can be difficult for some non-college bound students to attach much importance to academic coursework in high school.

However, inadequate basic skills can be a serious obstacle to job advancement. Because of changes in the nature of work, it is increasingly important for students to have good basic skills along with up-to-date job skills in order to be responsive to ever changing skill needs in the workplace. Furthermore, students need training in interpersonal and communication skills and motivational skills that will help them take charge of their own lifelong learning.

The Department of Labor's Commission on Work Force Quality and Labor Market Efficiency has stated that classroom excellence, continuing education and workplace flexibility are the cornerstones for rebuilding America's workforce. As educators, we need to take this advice to heart and move to design programs that equip students with essential academic and personal skills.

More Can Be Done to Promote Adult Literacy and Lifelong Learning

This is a simple question with a potentially very complex answer. We must develop strategies and programs to address the adult literacy and lifelong learning needs of people who are already adults, but more fundamentally, we must address a complex

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of systemic problems that result in adult basic skill deficits to begin with.

In terms of addressing the literacy needs of people who are already adults, at the national and state levels we need a more focused effort to implement and support adult education programs. More cooperation among the various agencies that fund adult education programming could result in more "bang for the buck" and a more rational system for delivery of adult education services at the local level. However, the responsibility for serving the literacy needs of adults does not rest only at higher levels of government. Local education agencies must begin to reach out more to the business community not only for financial support but also for direct involvement in the educational process.

"...of the 100 million workers who...will still be in the workforce by the year 2000, tens of millions are seriously handicapped in their work...by a lack of basic skills."

Furthermore, the business community must shift from being a consumer of the products of our educational system to being an active participant in the educational process. This means that business must not only attend more carefully to the basic and technical skill needs of workers through workplace literacy programs, but must also become more actively involved in K - 12 and postsecondary education.

This increased involvement of business will introduce students at an earlier age to the practical value of education as well as help schools continue to develop programs that are responsive to work preparation needs of students. Now more than ever, the concept of public-private partnerships to improve education must become the rule rather than the exception in our efforts to meet the needs of the coming decades.

In order to improve their ability to meet the employment-related literacy needs of students, Education Secretary Cavazos has recommended school districts expand counseling for junior high school students. This will give them an earlier look at career opportunities and teach them how coursework relates to future employment. Employers should be brought in earlier than high school to help students identify likely career paths and focus their academic efforts in those directions. Dr. Cavazos also recommends schools should measure program success based on student outcomes, design programs sensitive to local economies, and encourage business involvement in designing school programs.

The National Association of State Boards of Education (NASBE) and the National School Boards Association (NSBA) recently released a joint policy statement that called for vocational and technical programs to provide academic as well as occupational training to equip young people with the literacy skills they will need for success in the workforce.

In particular, noncollege-bound students should be helped to acquire both academic and technical skills needed to achieve a lifetime of productive employment. In light of the rapidly accelerating rate of change in the nature of work, this means vocational and technical schools must not only focus on the technical skills needed to get today's jobs, but on the academic and self-motivational skills needed for an individual to take charge of his or her own continued learning.

By far those who suffer worst in the job market are young people who failed to complete high school. The U.S. Bureau of Labor Statistics reported that the 450,000 youths who dropped out of school between October 1988 and October 1989 face a 28 percent unemployment rate. The need for effective programs to keep these youth in school and provide them with the basic academic skills and job skills necessary for them to compete in the workplace is greater than ever before.

Schools also need to provide more options for high school completion including more effective work study programs and stronger partnerships between local employers and the schools. Again, the job is in part one of better communication about the importance of school work to future economic success. This is particularly necessary for youth who have grown up in environments where there is no clear model for economic success based on academic achievement.

Long-Term Strategies Required

It is not enough to only suggest ways to remediate the basic skill deficits of people who are already adults. The more basic, and over the long run the more effective, strategy is to essentially cut off the supply of basic-skill deficient adults at its source. This means we need more relevant academic and vocational school programs and more effective programs for students at risk of dropping out.

Among other things, one part of an overall strategy to reduce the number of people coming out of our educational system with poor basic skills is to mount a serious and highly focused effort to involve parents in the education of their children. Illiteracy is highly intergenerational. That is, parents who cannot or do not read tend to produce children who have negative attitudes toward reading and who frequently do not do well in school.

Research has shown that parents of children who become successful readers do two things: they are involved in school programs and they monitor their children's progress in school (Becoming a Nation of Readers, 1985). Appleby et al (1987) point out that "schools do make a difference; an early start, appropriate instruction, and the emphasis on academic learning . . . all contribute to young people's developing literacy skills. But schools do not and cannot work alone; home influences have a powerful effect on literacy achievement."

Berlin (1988) supports the idea of the intergenerational nature of illiteracy by asserting that it is essential to remember that everything causes everything else in the generation-to-generation life cycle. Family background variables are crucial determinants of the life chances of children.

Parents can become involved in their children's education in many ways. Through federally funded Head Start, Even Start and family literacy programs, parents with poor basic skills themselves attend classes while their children participate in a preschool program. Parents and children are then brought together for shared activities that help foster a sense of shared value and purpose in learning to read.

Parent involvement programs in public schools can also be effective in improving children's attitudes toward school and achievement. However, Landerholm and Karr (1988) adopt the basic premise that in order to be successful, parent involvement programs must focus not only on the needs of the child, but also on the needs of the parent. This means parent involvement programs must also provide basic support services to help parents become involved as well as provide a continuum of program activities in which parents can become involved.

They suggest that parent involvement programs focus on activities in four main areas: basic parent support activities, parent support activities, educational program activities and educational leadership activities.

Basic parent support activities include home visits, field trips for parents, busing parents to school programs and parent/child breakfasts or lunches at school. Parent support activities include special events for families, school-organized car pools, parent support groups and parent lounge area in the school building.

Educational program activities focus on more interaction between parent and teacher and more parent participation in actually teaching the child. Educational leadership activities include parent leadership workshops, parent planning committees, parent-organized fund raisers and parent involvement in actually teaching in the classroom.

Traditional Approaches Failing

In summary, as a nation we are swiftly moving into an era where traditional views of education and its relationship to employment no longer work. Traditionally education has been focused on children, young adults and college students. However, we now have significant needs for more and better adult, vocational and technical education to address the basic literacy and lifelong learning needs of our population as well as our need for a more competitive workforce.

We can no longer tolerate having large percentages of our youth failing to finish high school, and we must somehow deal with the basic literacy needs of significant immigrant and refugee populations.

The answers to these pressing problems lie in greater efforts to address the basic skill needs of people who are already adults and more important, a greater focus on educational systems and strategies that promote positive attitudes toward literacy and lifelong learning in our children.

■ ■ ■

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GOAL 5
ADULT LITERACY AND LIFELONG LEARNING

McREL projects that address the areas of Adult Literacy and Lifelong Learning include:

- **An ongoing research and development project to design a basic English composition curriculum for adult basic literacy students using a computer-assisted, audio-supported format.**
- **A study to evaluate current case management and client assessment practices used by Job Training and Partnership Act projects and to make recommendations for improvement.**

GOAL 6: SAFE, DISCIPLINED AND DRUG-FREE SCHOOLS

By the year 2000, every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

Dr. Barbara L. McCombs is a director of research for the Mid-continent Regional Educational Laboratory where her work focuses on motivation and human development.

Dr. McCombs has extensive experience in researching the motivational issues of middle school students and young adults. She has developed a variety of teacher and student materials that enhance motivation and self-development. Her current work focuses on promoting mental health in youth through family and community outreach programs.

It is not difficult to understand why the National Governors' Association chose this goal. Drugs and violence are an increasing social problem in this country among all segments of our communities, and their growing impact on children is alarming at best.

During the June 1990 national conference sponsored by the U. S. Department of Education's Drug-Free Schools and Communities Program, demographer Harold Hodgkinson provided a view of the future. He reported that by the year 2000, children coming into our educational systems will be poorer, more ethnically and linguistically diverse, and will suffer from more handicaps affecting their learning than ever before. All of these factors put them at risk for dysfunctional behaviors, including drug and alcohol abuse and violence.

Consider the fact that 82 percent of America's prisoners are high school dropouts, and relationships between poverty, crime and drug abuse continue to surface (Hodgkinson, 1989). Clearly, schools can play an important role in prevention, particularly when working in partnership with parents and community-based teams.

It is also clear that the problem is urgent. We don't have time to offset the negative trends of crime, violence and drug abuse currently affecting a growing number of our school-age children. Thus the issue becomes: How can schools, parents and communities best work together to arrive at the most promising solution possible in the shortest period of time?

"Good News, Bad News"

Current research and practice in prevention programs for at-risk youth contain a "good news, bad news" story. The good news is that increased public awareness of the critical and severe nature of crime and drug problems in the schools is leading to increased federal and state funding for programs that can offset or reduce the incidence of these problems (Cavazos, 1990).

It is also good news that the agencies funding these programs are promoting collaboration and cooperation among government, community-based groups and schools. In addition, these programs focus on family outreach and the reduction of dysfunctionality in families which can, in turn, reduce the incidence of crime and substance abuse in youth.

The bad news, however, is that leadership within federal agencies and the prevention field believe there is no "quick fix." Complex, culturally appropriate and multi-faceted interventions are required, and/or known risk factors such as economic and social deprivation, dysfunctionality in families and academic failure must be reduced for

prevention efforts to be successful (e.g., Hawkins, 1990; Oliver-Diaz, 1990; Yin, 1990). Furthermore, despite increases in school programs and community action, drug and violence problems among youth nationally continue to be alarmingly severe. They are also on the rise for youth at earlier ages, often beginning between 10-12 years (Block & Block, 1986).

"Research relating drugs and violence in youth with family dysfunctionality has shown the importance of attention to entire families, not just the youth."

Recent research by Mills (1986) and Peck, Law and Mills (1989), however, indicates that this bad news may really not be that bad. In separate reviews of drug abuse and dropout prevention interventions undertaken for the National Institute of Drug Abuse (NIDA) and the U. S. Department of Education, they discovered those program elements that clearly contributed to program success were relatively simple and straightforward. More specifically, the common element across successful programs centered around the quality of the relationship established between adults and youth; around genuine caring for students and an understanding of the optimal climate for learning.

Almost irrespective of specific program components and focus, the single most important factor in the success or failure of a program was this quality relationship, including the quality of people carrying out the program. Thus, it matters less what is done than who does it and how. As Peck et al. (1989) state,

"All research concludes that at-risk youth have poorer self-concepts than other students, higher insecurity about their ability to fit in at school, and higher subjective perceptions that school is not for them. Staff must be the kind of people who are not only committed to, but optimistic about, reaching these youth. They must also be the kind of people who are able to bypass this insecure frame of reference and reach students at a deeper level of mental health, motivation and common sense" (p. 19).

In addition to this single element involving the quality and training of this staff, Peck et al. (1989) point out that there are some other "givens" for program success. These include

- policy, administrative, procedural and financial support;
- a student-centered focus combined with student involvement in program design;
- beginning as early as possible and involving families as much as possible; and
- attending to overall school climate and systematic change (effective school development).

Successful Programs Aim at Climate

With respect to the last factor, Peck et al. stress that successful programs aimed at the overall school climate have been the most effective in reducing the incidence of drug and alcohol abuse and discipline-related problems. This means programs need to impact the following (Peck et al., 1989, pp. 20-21):

1. Organizational and administrative dimensions affecting teachers' stress levels and their abilities to respond to the needs of high-risk youth.
2. Policies, procedures and other mechanisms affecting overall school climate and the way learning and behavioral problems are responded to by the schools.
3. Staff development and training in recognizing and responding to the needs of high-risk youth in the context of the normal role of each staff member in the school and the nature of their day-to-day interactions with students.
4. Factors affecting the overall motivational climate in the classroom and the ability of teachers to engage youth positively in learning.
5. Effective interventions aimed at individual needs of youth for counseling, advocacy, support and caring in a way that helps youth function at higher levels of mental health, positive motivation and learning ability.
6. Broadening the range of legitimate school activities in a way responsive to the interests of all groups of students and in a way that helps them see the relevance of their education to their personal aspirations, strengths and interests.

Attracting high-risk youth away from the lure of alcohol and drugs and addictive drug/gang subcultures requires a prevention model that empowers both youth and adults. The model should provide positive and visible role models, and options for meeting students' basic needs to feel accepted, significant and that their lives are meaningful.

Current programs, while often excellent, are not having the necessary impact, mainly due to two reasons. First, such models are weak because of the lack of attention to the critical "people" and "climate" variables in the sense discussed by Peck et al. (1989). The second reason is a lack of intensity. Efforts are too limited in time and scope, and they do not provide comprehensive and collaborative efforts involving partnerships of schools, families and community groups.

Families Critical to Combating Drugs

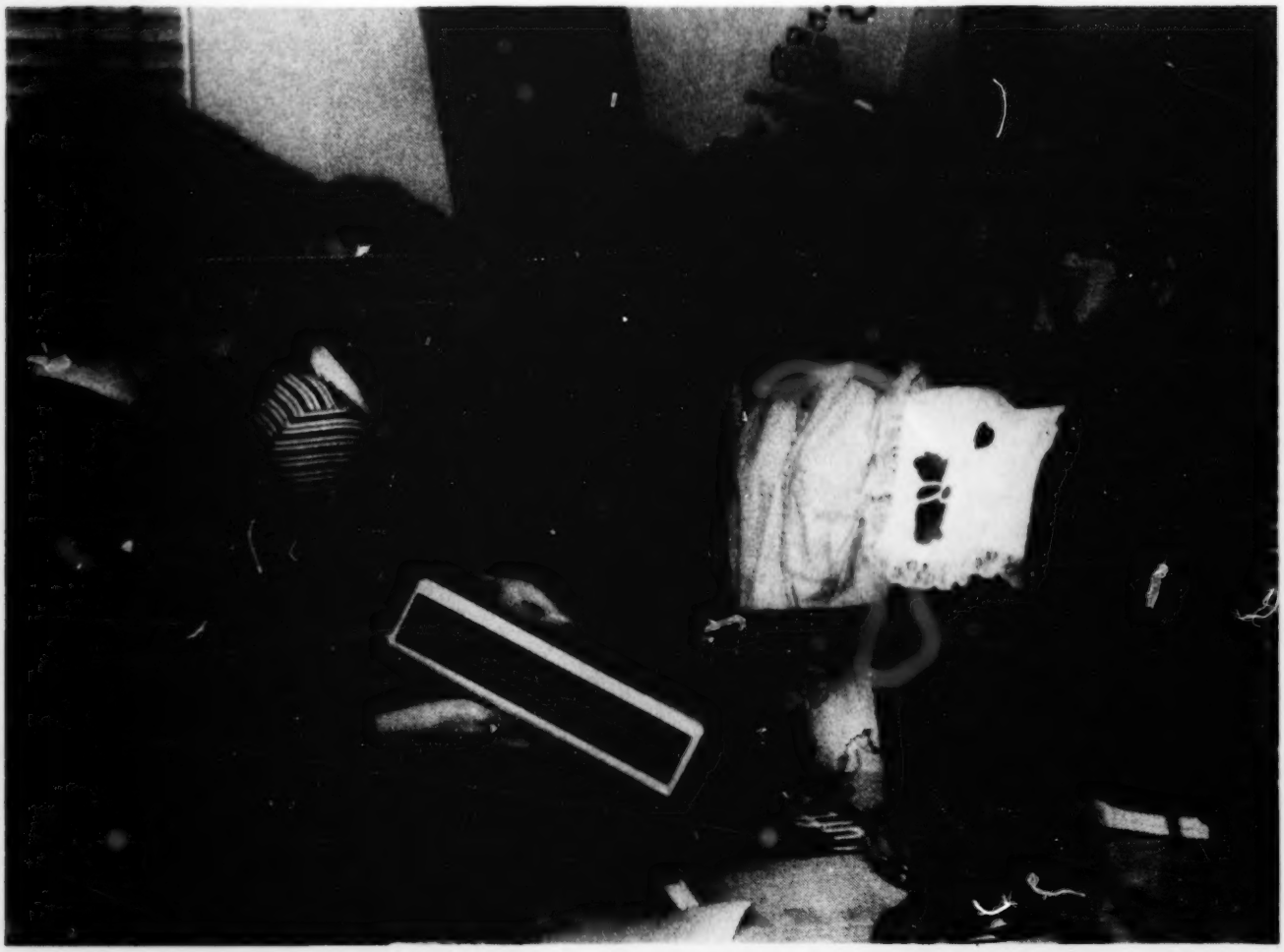
Research relating drugs and violence in youth with family dysfunctionality has shown the importance of attention to entire families, not just the youth. Children in communities with high incidences of gangs involved in illicit drug use are at risk due to a variety of cultural, economic and personal reasons. These children are at greater risk due to a sense of alienation from school coupled with the lack of school success (Wheelock & Dorman, 1988). This lack of identity with school and the lack of sources of socioemotional support from school or other environments forces many of these vulnerable children to find other ways to meet perceived needs for attachment and affiliation.

The problem is further complicated by the fact that many parents feel inadequate and unprepared to talk with their children about drugs and gangs. A recent report in *Education Daily* (March 8, 1989) indicates that while inner-city parents are more likely to discuss the drug problem with their children, the techniques they use (such as scare tactics) are often ineffective.

Further work by Patterson, DeBaryshe and Ramsey (1989) indicates that ineffective parenting is the first step on the route to chronic delinquency. Evidence has also indicated that ineffective parenting leads to not only chronic delinquency, but also puts the anti-social child at risk for long-term social maladjustment and criminal behavior.

The family profile for the anti-social child is said to be one characterized by little positive parental involvement with the child, harsh and inconsistent discipline, and poor monitoring and supervision of the child's activities. According to Patterson et al. (1989), the child is exposed to and reinforced with coercive behaviors, and eventually learns to control others through coercive means. This leads to anti-social behavior and a lack of social skills, further leading to rejection by peers and failure in school.

The combination of peer group rejection and anti-social behavior also



make the child especially vulnerable to deviant peer group membership. Such membership provides a major training ground for delinquent behavior and substance abuse. Research by Hawkins and Lishner (1987) on schooling and delinquency indicates that schooling itself may foster anti-social behavior due to strong relationships between delinquency and academic performance and attitudes toward school. Developmentally, poor adjustment to school in the early elementary grades, characterized by aggressive and disruptive behaviors, is the first school-related factor that appears to increase the risk of later delinquent behavior.

Early school misconduct has both direct and indirect effects on later delinquency. Early school misconduct appears to increase the risk of poor academic performance in later elementary grades which is, itself, associated with delinquency. Similarly, Ainsworth (1989) has argued that it is the human capacity to form representational models of another and of themselves in relationship to the other that produces attachment or various forms of affectional bonds.

In the example of the teenager who belongs to a gang of age-peers, Ainsworth's research suggests that once a youth begins to function from an alienated frame of reference, it is the group as a whole that is most important for meeting self-esteem, control and social support needs. The child may or may not have a special relationship with one or more members of the gang.

What is particularly vital from a prevention/intervention perspective is that children be reached prior to late childhood/early adolescence. If criminal careers begin at that time, evidence shows these children to be at the greatest risk of becoming chronic offenders. Contextual variables which are said to have negative effects on parenting skills include a history of anti-social behavior in other family members, demographic variables representing disadvantaged socioeconomic status and stressors. Examples of stressors include marital conflict and divorce. Anti-social behavior on the part of the parents is linked with ineffective discipline and with having an anti-social child (Patterson et al., 1989).

A New Prevention Framework

One of the goals, then, of a prevention intervention is to empower disadvantaged families with positive belief systems and skills for building a quality family life. The importance of this goal is supported by the theoretical perspective of Suarez, Mills and Stewart's (1987) and Mills, Dunham and Alpert's (1988) work with high-risk youth in early prevention and intervention programs. This research shows that increases in youth problems (such as arrests for drug abuse and serious crimes) as well as in the number of youth at-risk for these problems is evidence that more effective and earlier intervention programs are needed.

Also, Mills et al. (1988) point out that traditional approaches have assumed there is something to be "fixed" or something that is missing in high-risk youth. This assumption is questioned because it inadvertently serves to support a negative frame of reference in youth. This frame of reference prevents them from realizing more mentally healthy levels of functioning that can be brought out and nurtured from within.

From this perspective, Mills et al. present a "wellness model" for prevention programs. The model maintains inherent capabilities and higher levels of functioning (mental health) are within all of us, including high-risk youth. These can be accessed if the youth are placed in supportive environments where the external circumstances reinforcing their conditioned, negative ways of performing and reacting are removed. These higher levels of functioning include developing a more mature outlook, functioning with common sense, having an interest in learning, and displaying a natural attraction to nondeviant lifestyles. Once youth are in positive environments and in positive relationships with significant others, they are "freed up" to function at more mentally healthy levels of perception, feeling and behavior.

Mills et al. (1988) cite research indicating that early negative conditioning or "programming" from dysfunctional family or cultural experiences leads to the tendencies of high-risk youth to misinterpret other's intentions and to be biased in presuming hostility or aggression.

Further evidence indicates that youth at risk for delinquency, school failure, drug abuse and other "health damaging behaviors" come from families with high stress levels. In these families, parents tend to be in a bad mood or caught up in their own problems. As a result, they are irritable, argumentative or critical of their child much of the time. Studies show the most frequent form of interaction with children in these families involves nagging or finding fault. Punishment and discipline are meted out more as a function of the parent's mood level than as a consistent and empathic response to anything the children have done.

As a result, Mills et al. (1988) contend that negative cognitive programming begins to obscure the child's natural common sense, ability to learn by insight and feelings of well-being. Children in dysfunctional families develop insecure belief systems which, combined with negative school and community experiences, result in

increasing feelings of alienation and isolation from nondeviant peers and lifestyles. Of even more critical concern, is that they drop into a lower mood and perceive things in negatively biased ways. This "package" of insecure perceptions, feelings and behaviors can be termed "deviance" which, in turn, leads to problems like substance abuse, delinquency and school failure.

The "Wellness Model" Prevention Approach

Suggestions for prevention and early intervention from Mills et al.'s (1988) work include the following:

- *Focus on helping youth understand how their own thinking process works.* Help them understand how they can distort meanings based on their frame of reference and negative feelings (how thinking processes function at different mood levels).
- *Provide an environment of adult caring and interest,* in which adults validate children's worth and significance and provide opportunities for relationship building. Provide environments in which youth can see models and experience mentoring relationships in a nurturing family atmosphere of mutual caring and support.

The recommended approach here is one building on the assumption that bad moods (insecure states of mind) are triggered when youth feel their survival or self-esteem is at stake. Once triggered, negative moods become self-confirming, biased information processing occurs, and these youth feel increasingly threatened and insecure. The intervention strategy needed is one that "frees them up" to function from their natural state of mental health rather than "fixes them."

When this is accomplished, Mills et al.'s (1988) research shows these high-risk youth demonstrate the ability to more readily apply common sense in situations that previously would have triggered insecure cognitive distortions and aggressive behaviors. Following the intervention, when insecure states of mind were triggered, the youth were better able to maintain perspective and not act impulsively and in a self-defeating manner. This insight then allowed them to sustain their functioning at a more healthy, positive level of cognition.

What appears clear from this research is that schools are a necessary starting place for high-risk youth to begin experiencing quality, caring relationships. Schools also should be involved in parent outreach and community partnerships to help high-risk families access parenting training. This training should address

- How a frame of reference involving poor self-concept, insecurity about themselves and learning, and alienation affects their child's (and their own) moment-to-moment behavior, affect and perceptions.
- How to consistently maintain the kinds of positive, motivational interactions with the child that assist the child to see beyond this habitual frame of reference to experience feelings of self-worth and an internal locus of control. Also, to realize that, together, they can enjoy, grow and learn successfully.
- How to help alleviate the factors in the home environment that contribute to insecurity and reinforce a negative frame of reference, while developing factors that contribute to high self-esteem and a positive family climate and relationships.

With these recommendations in mind, let's now turn to how this governors' goal of "safe, disciplined and drug-free schools" relates to the goals of our schools, particularly in states in the region of the country served by McREL.

Schools, Parents, Communities Must Work Together

U.S. Secretary of Education Lauro F. Cavazos stated at the Fourth Annual Conference on Drug-Free Schools and Communities that he sees the goal of safe, disciplined and drug-free schools as one that must come first—as a condition prerequisite for reaching the other five goals. Whether we like it or not, schools have become a major parenting and socializing institution for today's youth. The healthy development of our youth has become a school, family and community goal and responsibility. To the extent that schools—working together with parents and community-based groups—can promote a drug- and violence-free environment through consistent and empathic discipline, this goal can be realized.

If the *health* of our youth is the shared goal, interventions must be those that can best focus on and promote this goal. Prevalent prevention paradigms, however, are based on

- the disease or deficit model (biochemical or genetic view);
- the environmentalist or behaviorist model (ecological view); or
- some combination of these two views.

These current paradigms also share the assumption that something is missing or something needs to be fixed—in the person or in the environment—in order for interventions to be successful. On the other hand, the "wellness model" of prevention, represented in the

work of Mills and his colleagues (Mills, 1986; Mills et al., 1988; Peck et al., 1989), offers a new, more hopeful and potentially more effective paradigm. The results of this paradigm are sustained and self-perpetuating.

For example, a comprehensive study of the effectiveness of this paradigm was conducted with youth from two large housing projects in the Miami area. Mills (1990) reports that in pre-post testing, 17 of the most at-risk youth (those who were truant from and/or failing in school) at the end of the first year of the program indicated that they (a) no longer skipped school; (b) were sent out of class less often; (c) were able to get B's or C's rather than D's or F's in their courses; and (d) had 75 percent fewer disciplinary referrals.

If we acknowledge and agree the problem of drug abuse and violence is increasing among our youth, and current programs have not had the needed impact on this negative trend, then a timely and maximal effective solution is needed. With this new prevention paradigm, we have the chance to address the issue mentioned at the beginning of this article. How can schools, parents and communities best work together to arrive at the most promising solution possible in the shortest period of time?

To begin the process of realizing this goal through the "wellness model," a number of other issues or recommendations (in keeping with those suggested by Peck et al., 1989) must be addressed. These include the following:

- *Conduct broadly-based planning efforts* involving parents, teachers, administrators, business persons, law enforcement personnel, and other people from community organizations and social agencies that work with youth. The focus of these efforts should be on deepening understandings of and commitments to collaborative "wellness" prevention programs that focus on the needs of the whole child.
- *Form school and community group partnerships* (including parents) that address coordinated early prevention and intervention collaboration strategies for reaching those families and children most at risk for drug abuse and violence. Collaborative groups must focus on strategies and educational programs for parent involvement and training that can produce immediate and continuing impact on drug and violence problems.
- *Form school- and community-based teams* that can, together with students, redesign their schools to be caring, disciplined environments conducive to learning and health. The focus here must be on empowering adults and youth to see their innate health, self-esteem and common sense, and on creating a climate of service and support.
- *Involve students in the design of school and community programs* that are relevant to their needs and interests, and that can challenge them toward healthy self-development. Adults in partnership with youth need to help build connections between school and community and help establish attitudes of shared responsibility for personal and community well-being and health.
- *Continue to expand the networks of collaboration and cooperation* among schools, parents and community groups. A key element in promoting ongoing and sustained individual and community health is the continual identification and recruiting of natural community leaders who can promote and extend the wellness model.

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Is One Solution Possible?

The Midwest, as with most other regions in our country, is a challenge of diversity—diversity of cultures, communities and problems ranging from those of urban inner-city schools to isolated rural schools. With this diversity, can one general solution for achieving safe, disciplined and drug-free schools be achieved? The answer is both "yes" and "no." Yes from the standpoint of *what* needs to be done; no from the standpoint of *how*.

With the "wellness model" as the foundation for all prevention efforts, the battle is three-quarters won. The other one-quarter will require the tailoring and adapting of this model to individuals and groups of youth and adults. The best promise, however, is that once empowered with the hope of wellness from within, individuals from areas of vast diversity will be motivated to personally take on the job of tailoring and outreach to their schools and communities.

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GOAL 6
SAFE, DISCIPLINED AND DRUG-FREE SCHOOLS

McREL approaches the problem of safe, disciplined and drug-free schools from the point of view of creating "wellness" in the individual and the community, rather than fixing problems. Selected projects include:

Neighbors Making a Difference **- a project for at-risk youth designed to empower adults such as parents, teachers, business people and police officers to assist youth in making healthy choices in dealing with life issues.**

Middle School Advisement Program **- a self-development curriculum designed to enable sixth, seventh and eighth grade students to better understand themselves and their relationships to others. The program challenges negative beliefs students may have about themselves and strengthens their sense of personal capability and self-motivation.**

Adult Empowerment Project **- a project that involves the development of a prototype model for teachers, parents and other significant adults who come in contact with school-age children. The model empowers adults to be able to relate to kids in ways that bring out their own mental health and self-esteem.**

CHANGING SOCIETY SPELLS SCHOOL REDESIGN

Without a fundamental restructuring of the American education system, the governors' goals may be unattainable.

Dr. C. L. Hutchins has served as the executive director of the Mid-continent Regional Educational Laboratory since 1984. His primary interest is the redesign of schools which he believes must change significantly to deal with the economic and social changes that will continue into the twenty-first century.

Dr. Hutchins is the senior developer of McREL's framework for site-based management and participatory decision making.

As Shirley McCune's introduction to this issue of *Noteworthy* indicates, to a certain extent the governors' goals represent an effort to improve the existing system. The real question is whether that system can be improved enough to really meet the goals. It may be the task they have set out is like trying to improve the efficiency of the internal combustion engine. It is already quite efficient as a result of years of improvement efforts. Yes, we might get some improvement, but at what price?

Some people, including many of the staff of McREL, argue we may need to ask a more fundamental question: Can the existing system, which has been improved significantly over the last few decades, really produce the results we want? Can we reduce dropouts to 5 or 10 percent nationwide? Can we really improve our math and science performance enough to beat the performance of some other country—keeping in mind that they are continuing their efforts to improve?

Perhaps the real question is whether we may need to reconsider the fundamental design of the system and, in effect, design an entirely different system. As radical as that sounds, it has happened in the past. In the 1830s, for example, the scattered community and so-called charity schools of New England emerged into the "common school," the archetype of today's school. In the 1890s, the high school and its curriculum were redesigned around Carnegie units, separate subjects, age-graded classrooms, and 50-minute periods. In the 1940s and 1950s, we created the comprehensive, consolidated high schools that have recently been dubbed the shopping mall model of schooling.

These changes were all made in response to dramatic changes in the society—waves of new immigrants starting in the 1830s, the full-blown emergence of the industrial society and the so-called reductionist concept of science in the 1890s, and the post-war baby boom in the 1950s.

Thus, we have redesigned schools in the past. It is not an entirely new idea. And, further, we are experiencing a change in society that is at least as significant as any that America experienced in the 1830s, 1890s and 1950s. Maybe it's time we ask the question whether an entirely new design might be more effective in this new and different time. Maybe "more of the same" really won't produce the improvements we are looking for.

After all, federal initiatives since 1865 have poured billions of dollars into the existing system and still we have not seen an appreciable change in achievement or dropout rates, even though we have made education available to millions who would not otherwise have been in school (for example, those with

special needs). Many other millions have enjoyed a far more equitable and humane experience than they might have otherwise through such programs as Head Start, Follow Through and Chapter 1.

The utility of using design as a framework for asking how to achieve the governors' goals can be seen by calling attention to how much of the current design of schools is the direct product of historical efforts to redesign the system. For example, the instructional methods dominating today's schools were primarily developed in the 1830s.

The problem then was how to indoctrinate large numbers of new immigrants into the culture of Protestant New England. Using methods that emerged in Prussia and were adapted by the Lancaster in England, the common schools used lecture and seatwork. These approaches reinforced the belief that students should passively accept what they were taught, and that the textbook should be used to control the information they received.

Today's society, by contrast, requires much more active learning. This results in creative problem solving and the attainment of skills for knowing how to access and make sense out of a flood of diverse information, including that not predigested through the textbook.

The current curriculum emerged out of the 1890s effort to teach Cartesian-Newtonian science. It was a reductionist's approach: break the world down into smaller and smaller units. For example, educators of the day divided the sciences up into botany, biology and so forth in order to study them separately. The result is a curriculum without connections. It isn't connected with real work, and it isn't connected to the complex, systemic issues that face society, such as energy, environment, social justice, communications, mental health, space or technology.

The current management system emerged during the first half of this century. Initially it was a response to the so-called scientific model of management—the efficiency expert with the stopwatch. It involved a top-down style of planning and control, divisions of labor that reduced the understanding and involvement of the workers (read: teachers).

It assembled dozens of independent, self-standing one-room schools and classrooms into a single plant with a hall down the middle, a roof over everything, a parking lot all around and a gymnasium velcro-ed on the side. It was not the kind of humane place that would respond to individual needs or connect the learning process well with the outside world.

Defining the problem the nation faces as a design problem has an additional advantage: it focuses attention away from blaming people to a collaborative society and ourselves. Today's teachers didn't create the current design. They are as much its victims as are students and the society. Administrators didn't invent it. They are just trying to make the old design function as well as it can without having it collapse around everyone's heads. School board members aren't responsible. No one told them when they ran for election that they would be asked to redesign the system.

The truth is that today's educators and policy makers are working harder and smarter than any of their counterparts in the past. They are also called on to do much more than anyone ever was in the past. Teachers are asked to deal with groups of students who are much more diverse than those of the common culture. Administrators are asked to do everything from run large transportation systems and real estate management firms to know which parent has custody of a child in order to make sure he or she isn't released to the wrong parent. Boards don't have time to deal with design issues. They are too busy handling problems ranging from phone calls from irate parents, to deciding on whether the elementary school multi-purpose room should be carpeted.

We won't reach the governors' goals unless we all work together to discover new school designs that will serve the needs of each community and each child.

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